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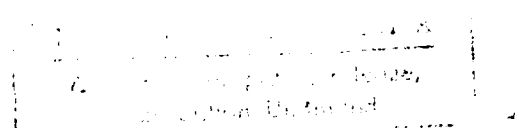
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**QUALIFICATION  
TEST REPORT  
CDRL NO. 29087**

**FUEL PUMP  
TEST STAND  
3C3965605**



**CONTRACT NO.  
F33657-84-C-2011**

**OCTOBER, 1991**

91-15921



91 1119 048

QUALIFICATION TEST REPORT

FUEL PUMP TEST STAND

3C3965G05

CONTRACT NO. F33657-84-C-2011

CDRL NO. 29087

DATE PREPARED - OCTOBER 1991

Preparing Agent:

J. Eric Moss 11/8/91  
J. Eric Moss, Test Stand Engineer  
GE Aircraft Engines/ESO

Approved By:

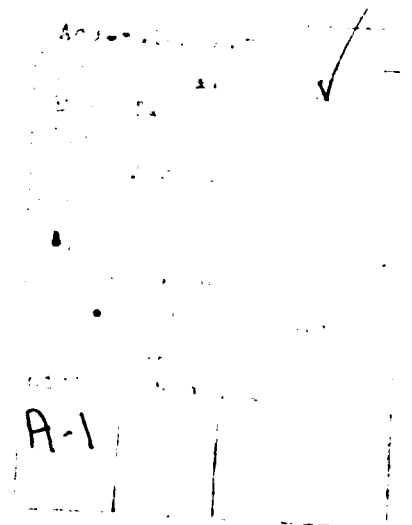
Jerry Vondran 11/11/91  
Jerry Vondran, Product Engineer  
GE Aircraft Engines/ESO

Procuring Activity:

USAF

Statement A per telecon Alva Pitsenvarger  
ASD/YZEP  
WPAFB, OH 45433

NWW 11/22/91



QUALIFICATION TEST REPORT  
3C3965G05, FUEL PUMP TEST STAND  
F110-GE-129

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**SECTION I**  
**INTRODUCTION**

QUALIFICATION TEST REPORT  
3C3965G05, FUEL PUMP TEST STAND  
F110-GE-129

I. INTRODUCTION

A. PURPOSE

The purpose of this report is to summarize the results of the Qualification Testing performed on the 3C3965G05 Fuel Pump Test Stand at Tinker Air Force Base.

B. GENERAL

The 3C3965G05 Fuel Pump Test Stand was designed for the USAF by General Electric Aircraft Engines, Cincinnati, Ohio. It was designed to test the F101-GE-102, F110-GE-100, F108-CF-100, F118-GE-100, and F110-GE-129 fuel pumps and subassemblies. The stand was modified from a G03 to a G05 configuration by the installation of retrofit kits 1412M66 (G04) and 1412M89 (G05). The 1412M66 kit enabled the stand to test the F118-GE-100 Main Fuel Pump while the 1412M89 kit provides F110-GE-129 Main Fuel Pump (and sub-assembly) testing capability. Qualification demonstration was conducted in September of 1991, and witnessed by Lieutenant Mike Christian from ASD.

C. TESTING

The objective of the testing program was to qualify the test stand for the F110-GE-129 main fuel pump. In so doing, the test stand was required to duplicate results obtained on the UUT manufacturer's test stand within tolerance limits established by ESO Design Engineering with concurrence from Evendale C&A Engineering. A copy of the correlation limits is contained in Appendix B. Two UUT's, main fuel pumps from Sundstrand and Argo Tech, were required for correlation. These UUT's were sent back to their manufacturer's for three separate test stand runs per UUT (by different operators if possible). These UUT's then became the standards (gold units) to correlate the stand against. The results obtained by the vendors were tabulated and the three runs averaged. The correlation limits were applied to these averages to determine a range of acceptance test limits against which the 3C3965G05 test data for the same UUT was compared.

After test stand modification and prior to qualification demonstration, the stand was subjected to an engineering evaluation by the GE stand test engineer.

The evaluation consisted of the following:

- o Gold Plate UUT's were run through T.O. test points and data recorded.
- o Results were evaluated against the correlation test limits.
- o Necessary technical and quality changes were made to obtain results which were within correlation.

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D. QUALIFICATION TESTING

The qualification testing for the stand was conducted at Tinker Air Force Base, Oklahoma City, Oklahoma. Testing was witnessed by ASD. Only the two main fuel pumps for the F110-GE-129 engine were tested on the test stand because the fuel boost pump and augmentor pump for the F110-GE-129 program are the same as those used on the F110-GE-100. In addition, since the modification did not affect any of the fuel boost pump or augmentor fuel pump hydraulic circuitry, the need to correlate these pumps was waived. All of the QTP inspections were demonstrated or audited, and the CFE manual reviewed.

After the F110-GE-129 pumps and sub-assemblies were tested, an F118-GE-100 Main Fuel Pump was also tested, and correlated, to demonstrate that the stand indeed had F118-GE-100 capability.

In concluding the qualification testing, correlation and QTP data sheets were signed by authorized GE and USAF attendees.

**SECTION II**

**DEFINITION  
OF TERMS**

II. DEFINITION OF TERMS

The following definitions apply to terms as used herein.

AFP	Augmenter Fuel Pump
ASD	Aeronautical Systems Division (Wright Patterson AFB)
ATP	Acceptance Test Procedure
ATR	Acceptance Test Report
C&A	Controls and Accessories (Evendale)
CAR	Corrective Action Request
CFAE	Contractor Furnished Aerospace Equipment (manual)
CFE	Contractor Furnished Equipment (manual)
CID	Change in Design
DCID	Development Change in Design
FBP	Fuel Boost Pump
GE	General Electric Company (Crescentville)
MFP	Main Fuel Pump
N/A	Not Applicable
OC-ALC	Oklahoma City Air Logistics Center
PMEL	Precision Measurement Equipment Lab
QTP	Qualification Test Procedure
QTR	Qualification Test Report
SEAR	Support Equipment Action Request
SIN	Significant Item Number
T.O.	Technical Order
UUT	Unit Under Test



**SECTION III**

**FACILITY REVIEW**

QUALIFICATION TEST REPORT  
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III. FACILITY REVIEW

All testing was performed at Tinker AFB, Oklahoma City, OK., in the Hazardous Accessories Test Building 3108. Facility services such as shop air, chilled water and electrical power were available to the stand at the required quantities as a part of prior 3C3965G01, G02, and G03 installations.

The remote electrical cabinets were located in a non-hazardous section of the test building approximately 200 feet from the test stand.

No additional facility services, or additional wiring between stand and remote cabinets were required as a result of the G05 modification.

**SECTION IV**

**APPLICABLE  
DOCUMENTS**

QUALIFICATION TEST REPORT  
3C3965G05, FUEL PUMP TEST STAND  
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IV. APPLICABLE DOCUMENTS

The following documents of issue in effect at the time of testing apply.

<u>DOCUMENT</u>	<u>TITLE</u>
M50TF35-S6	General Specification for Aircraft Engine Component Test Stands
MIL-T-83431	Military Specification Test Stand, Jet Engine Accessory Overhaul, General Specification for
M50TF3087-S13	Aircraft Engine Group Specification, Test Stand - Fuel Pump
QTP 3965G05 (Rev. B)	Qualification Test Procedure for Fuel pump Test Stand
T.O. 33D4-7-17-1	Operation and Maintenance Instructions with Illustrated Parts Breakdown (CFE)
CAR's	Corrective Action Request, written at Qualification Testing
6J10-3-95-4	Technical Manual Main Gear Pump Assembly (Argo Tech), F110-GE-129
6J10-3-96-4	Technical Manual Main Fuel Pump (Sundstrand), F110-GE-129
TS 4103	Acceptance Test Specification, Main Fuel Pump, Sundstrand
ATC 02-1823	Pump Assembly, Acceptance Test Procedure, Argo Tech

# SECTION U

## G05 STAND MODIFICATION

QUALIFICATION TEST REPORT  
3C3965G05, FUEL PUMP TEST STAND  
F110-GE-129

V. G05 STAND MODIFICATION

The following changes to the Fuel Pump Stand were planned as part of the modification to a G05 configuration:

- o Menus were added to the Micro-flo 100 for the F118-GE-100 and F110-GE-100 fuel pumps and sub-assemblies.
- o Replace an existing ANC-16 flowmeter (024AC), with an ANC-20 (025CA) flowmeter.
- o Add test kit hardware as required to hookup F110-GE-129 Fuel Pumps or testing
- o Test stand nameplates were replaced to reflect the 3C3965G05 configuration.

**SECTION VI**

**UUT REVIEW**

QUALIFICATION TEST REPORT  
3C3965G05, FUEL PUMP TEST STAND  
F110-GE-129

VI. UUT REVIEW

The following UUTs were tested during the Qualification demonstration.

<u>NOMENCLATURE</u>	<u>PART NUMBER</u>	<u>ENGINE</u>
MAIN FUEL PUMP	GE: 1373M87P07	F110-GE-129
MAIN FUEL PUMP	GE: 1457M13P03	F110-GE-129
MAIN FUEL PUMP	GE: 1265M91P07	F118-GE-100
MFP IMPENDING BYPASS INDICATOR	Sundstrand: 5907807	F110-GE-129
MFP ACTUAL BYPASS INDICATOR	Sundstrand: 5907808	F110-GE-129

The following UUT's and subassemblies were not tested during Qualification Demonstration. Testing of these was waived by OC-ALC/ASD Engineering representative on the basis of the previous stand qualification for these UUT's and subassemblies.

<u>NOMENCLATURE</u>	<u>PART NUMBER</u>	<u>ENGINE</u>
MAIN FUEL PUMP	SNECMA: 301-779-001-0 TRW: 708600-1	F108-CF-100
MAIN FUEL PUMP	SNECMA: 301-776-104-0 TRW: 704300-4	F108-CF-100
MAIN FILTER BYPASS VALVE	GE: None TRW: 215891-1	F108-CF-100
WASH FLOW FILTER BYPASS VALVE	GE: None TRW: 216272-1	F108-CF-100
FUEL BOOST PUMP	GE: 1296M72P01 Lear-Siegler: RR 54660D	F110-GE-100
MAIN FUEL PUMP	GE: 1265M11P14 1265M11P15 1265M11P16 1265M11P17 Sundstrand: 5007510F Sundstrand: 5007510G Sundstrand: 5007510H Sundstrand: 5008420A	F110-GE-100



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 3C3965G05, FUEL PUMP TEST STAND  
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<u>NOMENCLATURE</u>	<u>PART NUMBER</u>	<u>ENGINE</u>
AUGMENTER FUEL PUMP	GE: 9338MP05 9338MP06 9338MP07 Sundstrand: 5007351C Sundstrand: 5007351D Sundstrand: 5007351E	F110-GE-100
AUGMENTER FUEL PUMP BY-PASS CHECK VALVE	Sundstrand: 5903519	F110-GE-100
FUEL BOOST PUMP	GE: 9959M68P07 Sundstrand: 025519-110	F101-GE-102
AUGMENTER FUEL PUMP	GE: 9334M41P08 9334M41P09 9334M41P10 Sundstrand: 5007571E Sundstrand: 5007571F Sundstrand: 5007571G	F101-GE-102
AUGMENTER FUEL PUMP BY-PASS CHECK VALVE	Sundstrand: 5903519	F101-GE-102
MAIN FUEL PUMP	GE: 1270M24P03 Vickers: PF4-228-7E	F101-GE-102

**SECTION VII**

**SPECIAL  
TEST EQUIPMENT**

QUALIFICATION TEST REPORT  
3C3965G05, FUEL PUMP TEST STAND  
F110-GE-129

VII. SPECIAL TEST EQUIPMENT

No special test equipment was required to perform UUT testing.

**SECTION VIII**

**CALIBRATION**

QUALIFICATION TEST REPORT  
3C3965G05, FUEL PUMP TEST STAND  
F110-GE-129

VIII. CALIBRATION

All primary and secondary instrumentation was calibrated prior to the start of correlation testing. Calibration was accomplished by the PMEL group from Tinker AFB. Calibration certifications and data are available in the PMEL files.

**SECTION IX**

**TEST DISCUSSION**

QUALIFICATION TEST REPORT  
3C3965G05, FUEL PUMP TEST STAND  
F110-GE-129

IX. TEST DISCUSSION

The F110-GE-129 Main Fuel Pumps (Argo Tech and Sundstrand) were run and successfully correlated in one day. All of the sub-assembly tests were successfully completed on the following day. The third day of testing was used to run any non-correlateable tests such as break-in tests. All F110-GE-129 pump testing was completed in 3 days without any problems.

It was found that to correlate both pumps it was necessary to use a pressure measuring section on the inlet of each pump to read pump inlet pressure, PIN, as opposed to using the PIN port supplied on the pump housing. This affected the boost pressure rise significantly thus allowing us to correlate. Both pump manufacturers use similar pressure measuring sections during testing while plugging the PIN port on the pump housing.

NOTE: Lower boost pressure rises were experienced while using the pressure measuring sections than were seen when the PIN port was used. This means that a pump with an acceptable boost pressure rise when measured using the pump PIN port can conceivably be rejected for a low boost pressure rise if a pressure measuring section is used. Consequently, in order to prevent "good" pumps from being rejected as "bad" pumps it is better to use the actual PIN port on the pump housing as the adapter kit drawings show. The pressure measuring sections were only used to simulate the pump manufacturers' test set-ups and thus repeat their data.

Upon the completion of F110-GE-129 pump testing, discussion of the F118-GE-100 software, which was added per the G05 modification, revealed to Lieutenant Christian that the stand had been modified from a G03 to a G05 without any G04 (F118-GE-100) correlation testing taking place. Neither ILS (GE) nor ASD (Air Force) had notified Lt. Christian of GE's plans to modify the G03 stand instead of the G04 stand to the G05 configuration. Consequently, upon learning of the situation, we, GE, were asked to correlate a gold unit F118-GE-100 Main Fuel Pump which Tinker had in their possession. We received the pump on Thursday, 9/26, and successfully correlated on Monday, 9/29.

IX. TEST DISCUSSION cont'

The requirements for running the F118-GE-100 pump were only to correlate and to verify that any F118-GE-100 peculiar hardware was appropriately marked. The correlation data sheets for the F118-GE-100 pump are included in Appendix E. Since the only piece of F118-GE-100 (adapter kit) hardware added to the stand was a pump adapter for the gearbox, Lieutenant Christian verified the part marking while he was still in Oklahoma City. He then delegated Jeff Catron, OC-AIC, to witness the actual correlation of the F118-GE-100 Main Fuel Pump.

The only area of concern that arose during the F118-GE-100 pump testing was the low torque values experienced at the two lower speed test conditions. The torque tare chart, which is created by PMEL, indicated that the torque values seen were one inch-pound low. However, the chart only gave tare values at rpm speeds in multiples of 100. The tare values at the exact test condition speeds were checked and it was found the tare chart was slightly off. All torque values were indeed within limits. It was also noticed that the torque values experienced were very close to the same torque values seen when pump stand #1 was correlated. This only increases the credibility of the test stand torque readings.



SECTION X

STAND QTP  
INSPECTION ITEMS

QUALIFICATION TEST REPORT  
3C3965G05, FUEL PUMP TEST STAND  
F110-GE-129

X. STAND QTP INSPECTION ITEMS

The following are the applicable QTP inspection items. Refer to APPENDIX D for data sheets.

<u>DATA SHEET</u>	<u>ITEM</u>
4.2.1	WORKMANSHIP INSPECTIONS
4.2.3	MARKING INSPECTIONS
4.2.4	NEATNESS INSPECTIONS
4.2.5	CLEANLINESS INSPECTIONS
4.2.6	NEW QUALITY COMPONENTS
6.2.7	ELECTROMAGNETIC INTERFERENCE TESTS
6.2.27	RIGID AND FLEXIBLE LINES TEST
6.2.28	CALIBRATION
6.2.40	MICRO-FLO 100 INSTRUMENTATION INSPECTIONS

# SECTION XI

## CORRECTIVE ACTION REQUESTS

QUALIFICATION TEST REPORT  
3C3965G05, FUEL PUMP TEST STAND  
F110-GE-129

XI. CORRECTIVE ACTION REQUESTS (CAR's)

There were no Corrective Action Requests written during the qualification testing.

**SECTION XII**

**CONCLUSIONS**

QUALIFICATION TEST REPORT  
3C3965G05, FUEL PUMP TEST STAND  
F110-GE-129

XII. CONCLUSIONS

The test stand readily performed all required F110-GE-129 Main Fuel Pump UUT tests within established correlation limits.

All test stand functional inspections affected by the G05 modification were checked and found to be acceptable.

APPENDIX A

VENDOR  
CORRELATION TEST  
DATA SHEETS



ACCEPTANCE TEST DATA SHEET 6

Reference  
ATP Para. 7.11 & 7.12

PUMP CALIBRATION

Pump Speed rpm	Shaft Torque in-lb		Inlet Temp. of		Pump Inlet Pressure ± 2 psig	Boost Disch. Press. psig	Filter Disch. Press. psig	Boost Stage Pressure Rise psid		Filter Diff. Pressure psid		Pump Thru Flow gpm		Pump Bypass Flow gpm	Pump Total Flow gpm		Discharge Pressure psig	
	Req'd ±/-10	Actual	Req'd ±/-15	Actual				Req'd	Actual	Req'd	Actual	Req'd	Actual		Req'd	Actual	Req'd ±/-5	Actual
6307	6309	668.6	85	86.9	35 34.9	88.0	71.4	40 Min.	53.1	22.0 Max.	16.6	50.2 ±/-0.5	50.2	14.3	64.4	62 Min.	1360	1358
4128	442.8	165.1	85	86.7	25 25.8	43.9	29.9		18.1						43.4	42 Min.	275	276
885	985	109.0	85	86.3	10 10.4	11.3	11.3		.9						8.4	7.5 Min.	235	255
Seal Leak 0 cc/min 0.1 max.																		
Other Leaks 0 None Permitted																		
Fuel: MIL-T-7624 Type B-4 150 SP GR																		
Test Stand No. 3564 Temp. S/N																		
Tester A.V. Perm. S/N 00025																		
Date 5/24/91																		

QA  
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02-1823  
Sheet 36 Rev 7



F110 PUMP SERIAL #: 00025

TEST: 021.6.  
 DATE: 05/24/91 ENGINEER: OPERATOR: M. VASE TEST STD: 33B-4  
 BAROMETER: 29.40 IN-HG. FUEL TYPE: JP4 ✓ SPECIFIC GRAVITY: .72 @ 80 DEG.F

= SPEED	RPM	P1=TANK	PSIA	T1=TANK
TQ = TORQUE	IN-LB	P2=INLET	PSIG	T2=INLET
21 = HI-DISCH.	GPM	P3=FIL IN	PSIG	T3=BOOST DISCH.
21A= LO-DISCH.	GPM	P4=FIL OUT	PSIG	T4=IOV INLET
22 = BYPASS	GPM	P5=DISCH.	PSIG	T5=DISCH.
22 = IOV IN	GPM	P6=FIL BPV	PSID	T6=CELL AMB.
22 = SERVO RET.	GPM			

TIME:	N	TQ	Q1	Q1A	Q2	Q3	Q4
DATE:	P1	P2	P3	P4	P5	P6	
	T1	T2	T3	T4	T5	T6	

06:42:18 ✓	6309	666.6	50.2	3.77	14.2		
5/24/91 ✓	14.44	34.9	88.0	71.4	1358	17.2	
	84.9	86.9	77.9	86.7	97.5	78.2	
06:44:29 ✓	4128	165.1	43.4	3.26	0.0		
5/24/91 ✓	14.44	25.8	43.9	29.9	276	14.3	
	84.9	86.7	77.9	86.7	69.2	78.2	
5:46:41 ✓	285	109.0	8.4	0.53	0.0		
5/24/91	14.44	10.4	11.3	11.3	255	0.3	
	84.3	86.3	77.9	86.3	67.8	78.2	



ACCEPTANCE TEST DATA SHEET 6

Reference  
 VTP Para. 7.11 & 7.12

PUMP CALIBRATION

Pump Speed rpm	Shift Torque in-lb	Inlet Temp. of	Pump Inlet Pressure ± 2 psig	Boost Disch. Press. psig	Filter Disch. Press. psig	Boost Stage Pressure Rise		Filter Diff. Pressure		Pump Thru Flow		Pump Bypass Flow gpm	Pump Total Flow		Pump Discharge Pressure	
						Req'd	Actual	Req'd	Actual	Req'd	Actual		Req'd	Actual	Req'd	Actual
Req'd ±10	Max.	Req'd ±/-15													±/-5	
307	691	95	35 26.0	89.6	73.0	40 Min.	53.6	22.0 Max.	16.6	30.2 ±/-5	50.3	14.2	62 Min.	64.5	1360	1365
128	166	95	25 25.8	43.7	29.8		17.9						42 Min.	43.5	275	273
885	185	95	10 10.1	10.9	10.9		.8						7.5 Min.	8.4	255	252
Seal Leak 0 cc/min 0.1 max.																
Other Leaks 0 None Permitted																
Fuel: MIL-T-5624 Type JP-4																
Test Stand No. 3004 Temp. 3/N																
Tester H.V. Perm. 3/N 00025																
Date 8/24/91																
Signature: [Signature] 750 SP GR																

Argo-Tech Spec. No.

02-1823

Sheet

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Rev

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\*\*\*\*\*  
F110 PUMP SERIAL #: 00025

TEST: C0116.

DATE: 05/24/91 ENGINEER: OPERATOR: M. Huse TEST STD: 33B-4  
BAROMETER: 29.40 IN-HG. FUEL TYPE: JP4 ✓ SPECIFIC GRAVITY: .750 @ 80 DEG.F

\*\*\*\*\*

N = SPEED	RPM	P1=TANK	PSIA	T1=TANK
TQ = TORQUE	IN-LB	P2=INLET	PSIG	T2=INLET
Q1 = HI-DISCH.	GPM	P3=FIL IN	PSIG	T3=BOOST DISCH.
Q1A = LO-DISCH.	GPM	P4=FIL OUT	PSIG	T4=IGV INLET
Q2 = BYPASS	GPM	P5=DISCH.	PSIG	T5=DISCH.
Q3 = IGV IN	GPM	P6=FIL BPV	PSID	T6=CELL AMB.
Q4 = SERVO RET.	GPM			

\*\*\*\*\*

TIME:	N	TQ	Q1	Q1A	Q2	Q3	Q4
DATE:	P1	P2	P3	P4	P5	P6	
	T1	T2	T3	T4	T5	T6	

\*\*\*\*\*

06:52:54	✓ 6308	669.8	50.3	3.82	14.2		
05/24/91	✓ 14.44	36.0	89.6	73.0	1355	17.1	
	84.7	87.6	78.0	87.6	98.4	78.4	
06:54:56	✓ 4127	162.6	43.5	3.24	0.0		
05/24/91	✓ 14.44	25.8	43.7	29.8	273	14.5	
	85.4	87.2	78.0	87.2	89.7	78.4	
06:57:20	✓ 885	107.5	8.4	0.54	0.0		
05/24/91	14.44	10.1	10.9	10.9	252	0.4	
	84.5	86.5	78.2	86.5	87.8	78.8	

ACCEPTANCE TEST DATA SHEET 6

Reference  
ATP Para. 7.11 & 7.12

PUMP CALIBRATION

Pump Speed rpm	Shift Torque in-lb	Inlet Temp. of		Pump Inlet Pressure + 2 psig	Boost Disch. Press. psig	Filter Disch. Press. psig	Boost Stage Pressure Rise psid		Filter Diff. Pressure psid		Pump Thru Flow gpm		Pump Bypass Flow gpm	Pump Total Flow gpm		Pump Discharge Pressure psig			
		Req'd +/-15	Actual				Req'd	Actual	Req'd	Actual	Req'd	Actual		Req'd	Actual	Req'd +/-5	Actual		
Req'd +/-10																			
5307	6308	691	670.5	85	86.7	35	37.3	57.9	71.0	53.6	40 Min.	53.6	22.0 Max.	16.8	30.2 +/-5	62 Min.	64.4	1360	1360
1128	4127	185	162.9	85	86.5	25	25.5	49.6	29.7	18.1						42 Min.	43.5	275	275
886	886	185	107.2	85	86.0	10	10.3	11.8	11.8	1.0						7.5 Min.	5.4	235	253
Seal Leak				0 cc/min		0.1 max.		Test Stand No. 304		Temp. 5/N									
Other Leaks				0		None Permitted		Tester H/K		Form. 3/N 00026									
Fuel: MIL-T-2624 Type JP-4				✓		80 of		Date 5/24/91											

UA  
E. 7

Argo-Tech Spec. No.  
02-1823

Sheet 36	Rev 7
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F110 PUMP SERIAL #: 00025

TEST: 05/24/91

ENGINEER:

OPERATOR: M. Vase

TEST STD: 33B-4

BAROMETER: 29.49 IN-HG. FUEL TYPE: JP4 ✓ SPECIFIC GRAVITY: .750 @ 80 DEG.F

01 = SPEED	RPM	P1=TANK	PSIA	T1=TANK
02 = TORQUE	IN-LB	P2=INLET	PSIG	T2=INLET
03 = HI-DISCH.	GPM	P3=FIL IN	PSIG	T3=BOOST DISCH.
04 = LO-DISCH.	GPM	P4=FIL OUT	PSIG	T4=IGV INLET
05 = BYPASS	GPM	P5=DISCH.	PSIG	T5=DISCH.
06 = IGV IN	GPM	P6=FIL BPV	PSID	T6=CELL AMB.
07 = SERVO RET.	GPM			

TIME:	N	TQ	Q1	Q1A	Q2	Q3	Q4
DATE:	P1	P2	P3	P4	P5	P6	
	T1	T2	T3	T4	T5	T6	

07:02:28 ✓	6308	670.5	50.3	3.82	14.1		
05/24/91	14.45	34.3	87.9	71.0	1360	17.2	
	84.9	86.7	78.2	86.7	97.5	78.6	
07:05:35 ✓	4127	162.9	43.5	3.24	0.0		
05/24/91	14.45	25.5	43.6	29.7	273	14.3	
	84.9	86.5	78.6	86.5	89.2	78.8	
07:07:14 ✓	985	107.2	8.4	0.55	0.0		
05/24/91	14.45	10.8	11.8	11.8	252	0.4	
	84.3	86.0	78.6	85.8	87.4	78.8	

# Sundstrand Aviation Operations

Advanced Technology Group  
Sundstrand Corporation  
ROCKFORD, ILLINOIS 61128



PAGE NO: 16

SHEET 1 OF 4

TEST SPEC: TS 4103

REV. H

## TEST PROCEDURE TITLE

ACCEPTANCE TEST SPECIFICATION FOR MAIN FUEL PUMP  
MODEL NUMBER 025819 & 025819B

SUNDSTRAND PART NUMBERS (SEE REMARKS)

Test Location **802**

PART NO: <b>5009075A</b>	SERIAL NO: <b>SUS C 153</b>	OPERATOR: <b>1990</b>	INSPECTOR: <b>CE/CI</b>	DATE <b>3-22-91</b>
-----------------------------	--------------------------------	--------------------------	----------------------------	------------------------

REMARKS:	SUNDSTRAND ASSY NO.	SUNDSTRAND OUTLINE P/N	G.E. P/N
	5008623	5008622	1265M11P11
	5008623A	5008622A	1265M11P12
	5009076	5009075	1457M13P01
	M5009075	M5009075	1457M13P02
	5009076A	5009075A	1457M13P03

QUALITY  
ASSURANCE  
APPROVAL



A ( ) under actual reading column requires a check if satisfactory.

PROCEDURE PARA NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
5.0	(✓) If Run-In Completed	---	(NA)	---	---
5.1.2.2 (a)	<u>Total Flow With Relief Valve Plug</u> Flow at 1350 PSID gear stage pressure differential	---	<u>66.4</u>	---	GPM
5.1.2.3	<u>Performance with Relief Valve</u> <u>Cracking Pressure-Gear Stage</u> <u>Differential Pressure With</u> <u>2.0 to 5.0 GPM thru Valve</u>	1400	<u>1430</u>	1500	PSID
5.1.2.4 (b)	<u>Flow at 1350 PSID Gear Stage</u> <u>Pressure Differential</u>	---	<u>66.4</u>	---	GPM
	Difference Between (a) and (b) above (a-b)	---	<u>0.0</u>	0.5	GPM
5.2.1	<u>Indicator and Filter Bypass Valve</u> <u>Testing</u> <u>Impending Indicator Actuation</u> <u>Pressure</u>				
	Run #1	20	<u>22</u>	30	PSID
	Run #2	20	<u>22</u>	30	PSID
	Run #3	20	<u>22</u>	30	PSID

... NOTE ...

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Form G7478(1)/11

# Sundstrand ation Operations

Advanced Technology Group  
Sundstrand Corporation  
ROCKFORD, ILLINOIS 61125



TEST RECORD - CONTINUATION

PAGE NO: 11

TEST SPEC:

TS 4103

REV.

H

PART NO. 50090754 SERIAL NO. SJS 0 C / 51 DATE 3-22-91 DATA SHEET 2 OF 4

PROCEDURE PARA NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
5.2.1 (Cont'd)	Filter Bypass Valve Actuation Pressure				
	Run #1	40	<u>44</u>	55	PSID
	Run #2	40	<u>43</u>	55	PSID
	Run #3	40	<u>42</u>	55	PSID
	(✓) If Actual Bypass Indicator Actuates				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
5.2.2	<u>Indicator Resetting</u>				
	Impending Indicator (✓) If Acceptable				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
	Actual Indicator (✓) If Acceptable				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
5.2.4	<u>Service Shutoff Valve Leakage</u>	---	<u>0</u>	2.0	CC/MIN.
5.3	<u>Oil Seal Leakage</u>	---	<u>0</u>	0.1	CC/MIN.
5.4	<u>Fuel Shaft Seal Leakage Static Test</u>				
	Inlet Pressure, "0" PSIG & "0" RPM	---	<u>0</u>	0.1	CC/MIN.
5.5	<u>Flow Performance (Ref. Sheet 4 of 4)</u>	---	---	---	---

--- NOTE ---

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# Sundstrand ation Operations

Advanced Technology Group  
Sundstrand Corporation  
ROCKFORD, ILLINOIS 61125



TEST SPEC: TSC .03

REV. 8

PART NO. 509076.0 SERIAL NO. 0 C 153 DATE 3-12-91 DATA SHEET 3 OF 4

PROCEDURE PARA. NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
5.6	<u>Proof Pressure Stamp</u> (✓) If Acceptable	---	( <u>  /  </u> )	---	---
5.7	<u>Cleanliness</u> (✓) If Acceptable	---	( <u>  ✓  </u> )	---	---
5.8	<u>Preservation</u> (✓) If Performed	---	( <u>  /  </u> )	---	---
5.9	<u>Pump Dry Weight</u>  Record Weight from Route Card	---	<u>NA</u>	27.8	LBS

.... NOTE ....

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Form G7472(2)A/1188



5.5 FLOW PERFORMANCE

REV. B

SUNDSTRAND ACCEPTANCE TEST SPECIFICATION NO. TS 4103

SERIAL NO. SUS 0 C 153

TEST STAND NO. 802

DATE 3-20-91

TEST FLUID 7024

BAROMETRIC PRESS 24.16

CONDITION	UNIT	A	B	C			
PUMP SPEED	RPM	6307 ± 10	4128 ±10	886 ±10			
INLET TEMPERATURE	°F	70-100	70-100	70-100			
INLET PRESSURE	PSIG	35 ± 2	25 ± 2	10 ± 2			
DISCHARGE PRESSURE	PSIG	1360 ± 10	275 ± 5	255 ± 5			
INLET (ENGINE) FLOW	GPM	50.2 ± 0.5	*	*			
		REQ'D	RECORD	REQ'D	RECORD	REQ'D	RECORD
TOTAL FLOW	GPM	65.3 MIN.	66.3	43.3 MIN.	44.3	6.4 MIN.	8.4
BOOST PRESSURE RISE	PSID	40 MIN.	43	--	--	--	--
INPUT TORQUE	IN-LB	691 MAX.	676	193 MAX.	162	185 MAX.	118
FILTER PRESS. DROP	PSID	22.0 MAX.	14	--	--	--	2
FUEL SHAFT SEAL LEAKAGE	CC/MIN	0.1 MAX.	0	0.1 MAX.	0	0.1 MAX.	0
HOUSING/SPLIT LINE LEAKAGE	CC/MIN	0.0	0				

\*NOTE: CLOSE THE BYPASS VALVE AT THIS CONDITION, SUCH THAT ENGINE FLOW EQUALS TOTAL FLOW (WITHIN THE ACCURACY OF THE FLOWMETERS).

# Sundstrand Aviation Operations

Advanced Technology Group  
Sundstrand Corporation  
ROCKFORD, ILLINOIS 61125



PAGE NO: 16

SHEET 1 OF 4

TEST SPEC: TS 4103

REV. H

## TEST PROCEDURE TITLE

ACCEPTANCE TEST SPECIFICATION FOR MAIN FUEL PUMP  
MODEL NUMBER 025819 & 025819B

SUNDSTRAND PART NUMBERS (SEE REMARKS)

802  
Test Location

PART NO:

SERIAL NO:

OPERATOR:

INSPECTOR:

DATE

5009075A

SUS OC 153

1090

0161

3-22-91

REMARKS:

SUNDSTRAND ASSY NO.

SUNDSTRAND OUTLINE P/N

G.E. P/N

5008623

5008622

1265M11P11

5008623A

5008622A

1265M11P12

5009076

5009075

1457M13P01

M5009075

M5009075

1457M13P02

5009076A

5009075A

1457M13P03

QUALITY  
ASSURANCE  
APPROVAL



A ( ) under actual reading column requires a check if satisfactory.

O/R

PROCEDURE PARA. NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
3.0	(✓) If Run-In Completed	---	(NA)	---	---
5.1.2.2 (a)	<u>Total Flow With Relief Valve Plug</u> Flow at 1350 PSID gear stage pressure differential	---	66.3	---	GPM
5.1.2.3	<u>Performance with Relief Valve</u> <u>Cracking Pressure-Gear Stage</u> <u>Differential Pressure With</u> <u>2.0 to 5.0 GPM thru Valve</u>	1400	1425	1500	PSID
5.1.2.4 (b)	<u>Flow at 1350 PSID Gear Stage</u> <u>Pressure Differential</u>	---	66.3	---	GPM
	Difference Between (a) and (b) above (a-b)	---	0.0	0.5	GPM
5.2.1	<u>Indicator and Filter Bypass Valve</u> <u>Testing</u> <u>Impending Indicator Actuation</u> <u>Pressure</u>				
	Run #1	20	23	30	PSID
	Run #2	20	23	30	PSID
	Run #3	20	23	30	PSID

--- NOTE ---

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# Sundstrand Aviation Operations

Advanced Technology Group  
Sundstrand Corporation  
ROCKFORD, ILLINOIS 61125



TEST RECORD — CONTINUATION

PAGE NO: 17

TEST SPEC: TS 4103

REV. H

PART NO. \_\_\_\_\_ SERIAL NO. SJS \_\_\_\_\_ C \_\_\_\_\_ DATE \_\_\_\_\_ DATA SHEET 2 OF 4

PROCEDURE PARA NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
5.2.1 (Cont'd)	Filter Bypass Valve Actuation Pressure				
	Run #1	40	46	55	PSID
	Run #2	40	44	55	PSID
	Run #3	40	44	55	PSID
	(✓) If Actual Bypass Indicator Actuates				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
5.2.2	Indicator Resetting				
	Impending Indicator (✓) If Acceptable				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
	Actual Indicator (✓) If Acceptable				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
5.2.4	Service Shutoff Valve Leakage	---	0	2.0	CC/MIN.
5.3	Oil Seal Leakage	---	0	0.1	CC/MIN.
5.4	Fuel Shaft Seal Leakage Static Test				
	Inlet Pressure, "0" PSIG & "0" RPM	---	0	0.1	CC/MIN.
5.5	Flow Performance (Ref. Sheet 4 of 4)	---	---	---	---

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# Sundstrand Aviation Operations

Advanced Technology Group  
Sundstrand Corporation  
ROCKFORD, ILLINOIS 61126



TEST RECORD — CONTINUATION

PAGE NO: 18

TEST SPEC: TSC 4103

REV. H

PART NO. \_\_\_\_\_ SERIAL NO. C \_\_\_\_\_ DATE \_\_\_\_\_ DATA SHEET 3 OF 4

PROCEDURE PARA NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
5.6	<u>Proof Pressure Stamp</u> (✓) If Acceptable	---	(✓)	---	---
5.7	<u>Cleanliness</u> (✓) If Acceptable	---	(✓)	---	---
5.8	<u>Preservation</u> (✓) If Performed	---	(✓)	---	---
5.9	<u>Pump Dry Weight</u> Record Weight from Route Card	---	<u>NP</u>	27.8	LBS

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Form G7478(ZA/1188

5.5 FLOW PERFORMANCE

REV. H

SUNDSTRAND ACCEPTANCE TEST SPECIFICATION NO. TS 4103

SERIAL NO. SUS 0 C 153

TEST STAND NO. 802 DATE 3-20-91

TEST FLUID 702V  
BAROMETRIC PRESS 14.126

CONDITION	UNIT	A		B		C	
PUMP SPEED	RPM	6307 ± 10		4128 ±10		886 ±10	
INLET TEMPERATURE	°F	70-100		70-100		70-100	
INLET PRESSURE	PSIG	35 ± 2		25 ± 2		10 ± 2	
DISCHARGE PRESSURE	PSIG	1360 ± 10		275 ± 5		255 ± 5	
INLET (ENGINE) FLOW	GPM	50.2 ± 0.5		*		*	
TOTAL FLOW	GPM	REQ'D	RECORD	REQ'D	RECORD	REQ'D	RECORD
		65.3 MIN.	66.5	43.3 MIN.	44.6	6.4 MIN.	8.4
BOOST PRESSURE RISE	PSID	40 MIN.	43	--	--	--	--
INPUT TORQUE	IN-LB	691 MAX.	686	193 MAX.	160	185 MAX.	112
FILTER PRESS. DROP	PSID	22.0 MAX.	14	--	--	--	--
FUEL SHAFT SEAL LEAKAGE	CC/MIN	0.1 MAX.	0	0.1 MAX.	0	0.1 MAX.	0
HOUSING/SPLIT LINE LEAKAGE	CC/MIN	0.0	0				

\*NOTE: CLOSE THE BYPASS VALVE AT THIS CONDITION, SUCH THAT ENGINE FLOW EQUALS TOTAL FLOW (WITHIN THE ACCURACY OF THE FLOWMETERS).

# Sundstrand Aviation Operations

Advanced Technology Group  
Sundstrand Corporation  
ROCKFORD, ILLINOIS 61125



PAGE NO: 16

SHEET 1 OF 4

TEST SPEC: TS 4103

REV. B

## TEST PROCEDURE TITLE

ACCEPTANCE TEST SPECIFICATION FOR MAIN FUEL PUMP  
MODEL NUMBER 025819 & 025819B

SUNDSTRAND PART NUMBERS (SEE REMARKS)

802  
Test Location

PART NO: <u>5009075A</u>	SERIAL NO: <u>SUS Q C 153</u>	OPERATOR: <u>1090</u>	INSPECTOR: <u>6161</u>	DATE <u>3-22-91</u>
REMARKS: SUNDSTRAND ASSY NO. SUNDSTRAND OUTLINE P/N G.E. P/N				
5008623 5008622 1265M11P11				
5008623A 5008622A 1265M11P12				
5009076 5009075 1457M13P01				
M5009075 M5009075 1457M13P02				
5009076A 5009075A 1457M13P03				
A (✓) under actual reading column requires a check if satisfactory.				

QUALITY  
ASSURANCE  
APPROVAL



0/2

PROCEDURE PARA NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
5.0	(✓) If Run-In Completed	—	(NA)	—	—
5.1.2.2 (a)	Total Flow with Relief Valve Plug Flow at 1350 PSID gear stage pressure differential	—	<u>166.4</u>	—	GPM
5.1.2.3	Performance with Relief Valve Cracking Pressure-Gear Stage Differential Pressure With 2.0 to 5.0 GPM thru Valve	1400	<u>1425</u>	1500	PSID
5.1.2.4 (b)	Flow at 1350 PSID Gear Stage Pressure Differential	—	<u>66.4</u>	—	GPM
	Difference Between (a) and (b) above (a-b)	—	<u>0.0</u>	0.5	GPM
5.2.1	Indicator and Filter Bypass Valve Testing Impending Indicator Actuation Pressure				
	Run #1	20	<u>24</u>	30	PSID
	Run #2	20	<u>24</u>	30	PSID
	Run #3	20	<u>22</u>	30	PSID

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# Sundstrand Aviation Operations

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TEST RECORD -- CONTINUATION

PAGE NO: 17

TEST SPEC: TS 4103

REV. B

PART NO. 50090754 SERIAL NO. SJS D C 153 DATE 3-20-91 DATA SHEET 2 OF 4

PROCEDURE PARA NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
5.2.1 (Cont'd)	Filter Bypass Valve Actuation Pressure				
	Run #1	40	<u>45</u>	55	PSID
	Run #2	40	<u>43</u>	55	PSID
	Run #3	40	<u>43</u>	55	PSID
	(✓) If Actual Bypass Indicator Actuates				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
5.2.2	<u>Indicator Resetting</u>				
	Impending Indicator (✓) If Acceptable				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
	Actual Indicator (✓) If Acceptable				
	Run #1	---	(✓)	---	---
	Run #2	---	(✓)	---	---
	Run #3	---	(✓)	---	---
5.2.4	<u>Service Shutoff Valve Leakage</u>	---	<u>0</u>	2.0	CC/MIN.
5.3	<u>Oil Seal Leakage</u>	---	<u>0</u>	0.1	CC/MIN.
5.4	<u>Fuel Shaft Seal Leakage Static Test</u>				
	Inlet Pressure, "0" PSIG & "0" RPM	---	<u>0</u>	0.1	CC/MIN.
5.5	<u>Flow Performance (Ref. Sheet 4 of 4)</u>	---	<u>1</u>	---	---

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# **Sundstrand** **Aviation Operations**

Advanced Technology Group  
Sundstrand Corporation  
ROCKFORD, ILLINOIS 61125



TEST RECORD — CONTINUATION

PAGE NO: 18

TEST SPEC: TSC 4103

REV. H

PART NO. 50090754 SERIAL NO. 0 C 153 DATE 3-20-91 DATA SHEET 3 OF 4

PROCEDURE PARA. NUMBER	PARAMETER DESCRIPTION	REQUIREMENTS			UNITS
		MINIMUM	ACTUAL	MAXIMUM	
5.6	<u>Proof Pressure Stamp</u> (✓) If Acceptable	---	(✓)	---	---
5.7	<u>Cleanliness</u> (✓) If Acceptable	---	(✓)	---	---
5.8	<u>Preservation</u> (✓) If Performed	---	(✓)	---	---
5.9	<u>Pump Dry Weight</u> Record Weight from Route Card	---	<u>NA</u>	27.8	LBS

--- NOTE ---  
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Form G7478(2A/1188



5.5 FLOW PERFORMANCE

REV. H

SUNDSTRAND ACCEPTANCE TEST SPECIFICATION NO. TS 4103

SERIAL NO. SUS 0 C 153

TEST STAND NO. 802

DATE 7-20-71

TEST FLUID 7024

BAROMETRIC PRESS 14.136

CONDITION	UNIT	A	B	C
PUMP SPEED	RPM	6307 ± 10	4128 ± 10	886 ± 10
INLET TEMPERATURE	°F	70-100	70-100	70-100
INLET PRESSURE	PSIG	35 ± 2	25 ± 2	10 ± 2
DISCHARGE PRESSURE	PSIG	1360 ± 10	275 ± 5	255 ± 5
INLET (ENGINE) FLOW	GPM	50.2 ± 0.5	*	*
TOTAL FLOW	GPM	REQ'D 65.3 MIN. RECORD 66.6	REQ'D 43.3 MIN. RECORD 44.5	REQ'D 6.4 MIN. RECORD 8.3
BOOST PRESSURE RISE	PSID	40 MIN. 43	--	--
INPUT TORQUE	IN-LB	691 MAX. 682	193 MAX. 162	185 MAX. 112
FILTER PRESS. DROP	PSID	22.0 MAX. 14	--	--
FUEL SHAFT SEAL LEAKAGE	CC/MIN	0.1 MAX. 0	0.1 MAX. 0	0.1 MAX. 0
HOUSING/SPLIT LINE LEAKAGE	CC/MIN	0.0 0		

\*NOTE: CLOSE THE BYPASS VALVE AT THIS CONDITION, SUCH THAT ENGINE FLOW EQUALS TOTAL FLOW (WITHIN THE ACCURACY OF THE FLOWMETERS).

# APPENDIX B

## DEFINITION OF UUT CORRELATION LIMITS

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CDRL NO. 29084 REVISION A

THE CORRELATION TOLERANCES AND LIMITS FOR THE F110-GE-129 FUEL PUMPS ARE TO BE THE SAME VALUES AS UTILIZED FOR THE F110-GE-100 CORRELATION TESTING WITH THE EXCEPTION OF THE TORQUE LIMITS. THESE VALUES ARE LISTED IN THE CORRELATION LIMIT COLUMN OF THE ATTACHED PAGES. THESE LIMITS ARE APPLICABLE TO THE F110-GE-129 FUEL PUMPS ON THE BASIS OF SIMILARITY OF DESIGN REQUIREMENTS, FUNCTIONAL TESTING REQUIREMENTS, AND TYPE/RANGE OF PARAMETERS BEING MEASURED/CONTROLLED DURING TESTING. THE VENDOR CORRELATION DATA EXHIBITED SLIGHTLY MORE VARIATION FOR THE INPUT TORQUE VALUES WHICH IS WHY THE TOLERANCES WERE INCREASED. SEE LETTER TO SAM PRESTON DATED MAY 17, 1991 AT THE END OF THIS SECTION.

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CDRL NO. 29084 REVISION A

CORRELATION LIMITS FOR

THE F110-GE-129

MAIN FUEL PUMPS

P/N 1457ML3P03

P/N 1373MB7P07

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CDRL NO. 29084 REVISION A

F110-GE-129 MAIN FUEL PUMP

1373M87P07  
AND  
1457M13P03

FUEL PUMP TEST STAND

CORRELATION LIMITS

GE SPECIFICATION EC45N0121 CLASS A

SECTION 2

<u>PARAGRAPH</u>	<u>DESCRIPTION</u>	<u>LIMIT</u>
4.2.1.2	PERFORMANCES	SEE TABLE I
4.2.1.3	PRESSURE REL VALVE	+/-50 PSIG
4.2.1.6.1	FUEL LEAKAGE	+/- .1 CC/MIN

TABLE I PERFORMANCE

<u>CONDITION</u>	<u>TOTAL FLOW</u>	<u>TORQUE</u>	<u>BOOST PRESS RISE</u>
A	+/- .5 GPM	+/-10 IN-LBS	+/- 2 PSIG
B	+/- .5 GPM	+/-6 IN-LBS	—
C	+/- .5 GPM	+/-6 IN-LBS	—

GE AIRCRAFT ENGINES

Crescentville Road  
Mail Drop: IB3  
Dial Comm: 8-623-4559  
Copies: K. Karamchandani

Date: May 17, 1991  
To: Sam Preston, Application Engineer  
From: Eric Moss, SE Design

Subject: 3C3965G05 Fuel Pump Test Stand Correlation Limits

Sam:

The Fuel Pump Test Stand QTP still needs the correlation tolerances added before it can be sent to the Air Force for approval. Initially we were planning on using the same correlation tolerances that were used for the F110-GE-100 qualification testing for the F110-GE-129 qualification testing. However, the vendor correlation data received from Sundstrand for the -129 pump exhibits more data variance than the prior -100 pumps. As a result, I propose the following correlation tolerances:

Table I Performance

Condition	Total Flow	Torque	Boost Pressure Rise
A	± .5 GPM	± 10 in-lb	± 2 psig
B	± .5 GPM	± 6 in-lb	- -
C	± .5 GPM	± 6 in-lb	- -

Note: The torque tolerance is the only tolerance that is different from prior -100 testing. The other parameters were very repeatable and as a result shall remain the same. Also note that much greater tolerances have been used for other Main Fuel Pumps in the past. See Attachment.



Signed  
J. Eric Moss  
Design Engineer



Concurred  
Bob Siebert  
Controls & Accessories

APPENDIX C

CORRELATION  
DATA SHEETS

CORRELATION DATA SHEET "C1" PAGE 1 OF 18  
 F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
 CONTRACT NO. F33657-84-C-2011  
 3C3965G05 FUEL PUMP TEST STAND  
 CRL NO. 29084 REVISION B

PART NO. 1373487P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-4	OIL SEAL CHECK				
7-4b(5)	LEAKAGE AT 55 ± 5 PSIG	LEAKAGE MAXIMUM 0.1 CCM	0	✓	
7-6	PRIMARY GREEN RUN				
7-6b(2)	3 MINUTE RUN AT 3000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (200 ± 20 PSIG)	201	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	30.48	✓	
		BOOST STAGE DISCH PRESS (PSIG)	10.52	✓	
		FILTER OUTLET PRESSURE (PSIG)	32.51	✓	
		PUMP DISCHARGE FLOW (GPM)	31.9		12,100 gph @ 71°
		SHAFT TORQUE (IN-LB)	111	✓	

William J. DeMat  
 CONTRACTOR ENGINEERING

10/2/91  
 DATE

Jim Mox  
 TEST STAND ENGINEER

10/10/91  
 DATE

CONTRACTOR QUALITY

DATE

William J. DeMat  
 PROCURING ACTIVITY

10/2/91  
 DATE



CORRELATION DATA SHEET "C1" PAGE 2 OF 18

F110-GE-129 MAIN FUEL PUMP

PART NO. 137387P07 S/N ATC 00025

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	1 MINUTE RUN AT 3000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (300 ± 20 PSIG) PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG) BOOST STAGE DISCH PRESS (PSIG) FILTER OUTLET PRESSURE (PSIG) PUMP DISCHARGE FLOW (GPM) SHAFT TORQUE (IN-LB)	N/A		PRESSURE AND PUMP SPEEDS WERE PREVIOUSLY DEMONSTRATED DURING CORRELATION TESTING. POINTS WERE DELETED AS BEING REDUNDANT.
	1 MINUTE RUN AT 5000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (300 ± 20 PSIG) PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG) BOOST STAGE DISCH PRESS (PSIG) FILTER OUTLET PRESSURE (PSIG) PUMP DISCHARGE FLOW (GPM) SHAFT TORQUE (IN-LB)	N/A		"

William J. Sullivan  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. Eric Mann  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

William J. Sullivan  
FLOORING ACTIVITY

10 Oct 91  
DATE

CORRELATION DATA SHEET "C1" PAGE 3 OF 18

FL10-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CURL NO. 29084 REVISION B

PART NO. 1373487P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	1 MINUTE RUN AT 5000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (400 ± 20 PSIG)  PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)  BOOST STAGE DISCH PRESS (PSIG)  FILTER OUTLET PRESSURE (PSIG)  PUMP DISCHARGE FLOW (GPM)  SHAFT TORQUE (IN-LB)	403  30.24  26.74  37.10  53.2  243	✓  ✓  ✓  ✓  ✓	20138 rpm @ 75°  PRESSURE AND PUMP SPEEDS WERE PREVIOUSLY DEMONSTRATED DURING CORRELATION TESTING. POINTS WERE DELETED AS BEING REDUNDANT.
	1 MINUTE RUN AT 6000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (400 ± 20 PSIG)  PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)  BOOST STAGE DISCH PRESS (PSIG)  FILTER OUTLET PRESSURE (PSIG)  PUMP DISCHARGE FLOW (GPM)  SHAFT TORQUE (IN-LB)	N/A  N/A  N/A  N/A  N/A  N/A	        	

William J. Smith  
CONTRACTOR ENGINEERING

10/2/91  
DATE

John J. Smith  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

William J. Smith  
PROCURING ACTIVITY

10 Oct 91  
DATE

CORRELATION DATA SHEET "C1" PAGE 4 OF 18

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CRL NO. 29084 REVISION B

PART NO. 1373487P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	1 MINUTE RUN AT 6000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (500 ± 20 PSIG)  PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)  BOOST STAGE DISCH PRESS (PSIG)  FILTER OUTLET PRESSURE (PSIG)  PUMP DISCHARGE FLOW (GPM)  SHAFT TORQUE (IN-LB)	500  30.87 38.70 40.72 63.8 311	✓  ✓ ✓ ✓ ✓	24113 pph @ 79°
	2 MINUTE RUN AT 1000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (200 ± 20 PSIG)  PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)  BOOST STAGE DISCH PRESS (PSIG)  FILTER OUTLET PRESSURE (PSIG)  PUMP DISCHARGE FLOW (GPM)  SHAFT TORQUE (IN-LB)	205  28.77 1.64 29.46 10.0 80	✓  ✓ ✓ ✓ ✓	3790 pph @ 79°

9/22/91  
CONTRACTOR'S ENGINEERING

10/2/91  
DATE

TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

PROOFING ACTIVITY

10/2/91  
DATE

CORRELATION DATA SHEET "C1" PAGE 5 OF 18

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CURL NO. 29084 REVISION B

PART NO. 1373487E07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	2 MINUTE RUN AT 1000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (600 ± 20 PSIG)  PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)  BOOST STAGE DISCH PRESS (PSIG)  FILTER OUTLET PRESSURE (PSIG)  PUMP DISCHARGE FLOW (GPM)  SHAFT TORQUE (IN-LB)	601  29.88  1.98  29.98  9.1  246	  ✓  ✓  ✓  ✓  ✓	       3437 pph @ 83°
	1 MINUTE RUN AT 4000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (300 ± 20 PSIG)  PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)  BOOST STAGE DISCH PRESS (PSIG)  FILTER OUTLET PRESSURE (PSIG)  PUMP DISCHARGE FLOW (GPM)  SHAFT TORQUE (IN-LB)	302  28.48  18.00  33.3  42.4  174	  ✓  ✓  ✓  ✓  ✓	       15994 pph @ 83°

J. J. [Signature]  
CONTRACTOR ENGINEERING

10/12/91  
DATE

J. J. [Signature]  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

[Signature]  
FLOORING ACTIVITY

10/24/91  
DATE

CORRELATION DATA SHEET "C1" PAGE 6 OF 18

FL10-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CTRL NO. 29084 REVISION B

PART NO. 1373MB7P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	15 MINUTE RUN AT 4000 RPM RECORD PRESSURE, FLOW, TORQUE (CONT'D)	PUMP DISCHARGE PRESSURE (PSIG) (700 ± 20 PSIG)  PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)  BOOST STAGE DISCH PRESS (PSIG)  FILTER OUTLET PRESSURE (PSIG)  PUMP DISCHARGE FLOW (GPM)  SHAFT TORQUE (IN-LB)	708  28.53 46.58 33.49 41.6 343	✓  ✓ ✓ ✓ ✓	15693 pph @ 83°
	15 MINUTE RUN AT 5000 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (300 ± 20 PSIG)  PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)  BOOST STAGE DISCH PRESS (PSIG)  FILTER OUTLET PRESSURE (PSIG)  PUMP DISCHARGE FLOW (GPM)  SHAFT TORQUE (IN-LB)	304  28.87 55.85 36.62 53.3 200	✓  ✓ ✓ ✓ ✓	
					20101 pph @ 84°

William J. Schmitt  
CONTRACTOR ENGINEERING

10/12/91  
DATE

CONTRACTOR QUALITY

J. E. May  
TEST STAND ENGINEER

10/10/91  
DATE

William J. Schmitt  
PROCURING ACTIVITY

12 Oct 91  
DATE

CORRELATION DATA SHEET "C1" PAGE 7 OF 18

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

PART NO. 1373467E07 S/N A7C 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	1 MINUTE RUN AT 5000 RPM RECORD PRESSURE, FLOW, TORQUE (CONT'D)	PUMP DISCHARGE PRESSURE (PSIG) (800 ± 20 PSIG)	803	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	2921	✓	
		BOOST STAGE DISCH PRESS (PSIG)	55.95	✓	
		FILTER OUTLET PRESSURE (PSIG)	37.50	✓	
		PUMP DISCHARGE FLOW (GPM)	52.3	✓	19696 gph @ 87°
		SHAFT TORQUE (IN-LB)	405	✓	
	1 MINUTE RUN AT 6307 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (400 ± 20 PSIG)	401	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	2921	✓	
		BOOST STAGE DISCH PRESS (PSIG)	70.80	✓	
		FILTER OUTLET PRESSURE (PSIG)	40.52	✓	
		PUMP DISCHARGE FLOW (GPM)	67.2	✓	25372 gph @ 83°
		SHAFT TORQUE (IN-LB)	285	✓	

William J. D. Dett  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. J. Mon  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

W. J. Dett  
HOORING ACTIVITY

10 Oct 91  
DATE

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
 CONTRACT NO. F33657-84-C-2011  
 3C3965G05 FUEL PUMP TEST STAND  
 CDRL NO. 29084 REVISION B

PART NO. 1373487P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	2 MINUTE RUN AT 6307 RPM RECORD PRESSURE, FLOW, TORQUE (CONT'D)	PUMP DISCHARGE PRESSURE (PSIG) (1100 ± 20 PSIG)	1103	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	29.85	✓	
		BOOST STAGE DISCH PRESS (PSIG)	72.26	✓	
		FILTER OUTLET PRESSURE (PSIG)	43.77	✓	
		PUMP DISCHARGE FLOW (GPM)	65.6	✓	24748 gph @ 86°
		SHAFT TORQUE (IN-LB)	574	✓	
	15 SECOND MAX AT 6307 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (1400 ± 20 PSIG)	1401	✓	
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	29.84	✓	
		BOOST STAGE DISCH PRESS (PSIG)	44	✓	
		FILTER OUTLET PRESSURE (PSIG)	73.14	✓	
		PUMP DISCHARGE FLOW (GPM)	64.7	✓	24351 gph @ 89°
		SHAFT TORQUE (IN-LB)	695	✓	

J. Williams  
 CONTRACTOR ENGINEERING

10/2/91  
 DATE

J. Williams  
 TEST STAND ENGINEER

10/10/91  
 DATE

CONTRACTOR QUALITY

DATE

William  
 RECORDING ACTIVITY

10/2/91  
 DATE

CORRELATION DATA SHEET "C1" PAGE 9 OF 18

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

PART NO. 1373MB7P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-65(2) CONT'D	2 MINUTE RUN AT 590 RPM RECORD PRESSURE, FLOW, TORQUE	PUMP DISCHARGE PRESSURE (PSIG) (275 ± 20 PSIG)	N/A		PRESSURE AND PUMP SPEEDS WERE PREVIOUSLY DEMONSTRATED
		PUMP INLET PRESSURE (PSIG) (30 ± 5 PSIG)	N/A		DURING CORRELATION
		BOOST STAGE DISCH PRESS (PSIG)	N/A		TESTING. POINTS WERE DELETED AS BEING REDUNDANT.
		FILTER OUTLET PRESSURE (PSIG)	N/A		
		PUMP DISCHARGE FLOW (GPM)	N/A		
		SHAFT TORQUE (IN-LB)	N/A		

William A. Helbert  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. C. Miller  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

William A. Helbert  
FLOORING ACTIVITY

10 Oct 91  
DATE



F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
 CONTRACT NO. F33657-84-C-2011  
 3C3965G05 FUEL PUMP TEST STAND  
 CURL NO. 29084 REVISION B

PART NO. 1373487P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
<u>7-7</u>	<u>PRESSURE RELIEF VALVE SETTING</u>				
7-7b	RELIEF PLUG INSTALLED	GEAR INLET PRESSURE (PSI)	N/A		THESE TEST POINTS (PRESSURES AND SPEEDS) WERE PREVIOUSLY DEMONSTRATED ON THE SUNDSTAND PUMP.
		GEAR DISCHARGE PRESSURE (PS)	N/A		
		GEAR PRESSURE RISE (1350 ± 15 PSID)	N/A		
7-7b(4)		PUMP DISCHARGE FLOW (GPM)	N/A		

William J. Dill  
 CONTRACTOR ENGINEERING

10/2/91  
 DATE

J. C. Martin  
 TEST STAND ENGINEER

10/19/91  
 DATE

CONTRACTOR QUALITY

DATE

William J. Dill  
 PROOING ACTIVITY

10/2/91  
 DATE

CORRELATION DATA SHEET "C1" PAGE 11 OF 18  
 F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
 CONTRACT NO. F33657-84-C-2011  
 3C3965G05 FUEL PUMP TEST STAND  
 CIRL NO. 29084 REVISION B

PART NO. 137M87P07 S/N ATC 0025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-7 CONT'D	PRESSURE RELIEF VALVE SETTING (CONT'D)				
7-7c	RELIEF VALVE INSTALLED (VALVE CRACKED)	GEAR INLET PRESSURE (PFO) GEAR DISCHARGE PRESSURE (PS) GEAR PRESSURE RISE (1350 ± 15 PSID)	N/A N/A N/A		THESE TEST POINTS (PRESSURES AND SPEEDS) WERE PREVIOUSLY DEMONSTRATED ON THE SUNDSTRAND PUMP.
7-7c(3)		PUMP DISCHARGE FLOW (GPM) (WITHIN 0.2 GPM OF FLOW AT 7-7b(4))	N/A		

William J. Smith  
 CONTRACTOR ENGINEERING

10/2/91  
 DATE

J. E. Miller  
 TEST STAND ENGINEER

10/10/91  
 DATE

CONTRACTOR QUALITY \_\_\_\_\_

DATE \_\_\_\_\_

William J. Smith  
 FLOORING ACTIVITY

10/2/91  
 DATE

CORRELATION DATA SHEET "C1" PAGE 12 OF 18

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CDRL NO. 29084

PART NO. 137367P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-7 CONT'D	PRESSURE RELIEF VALVE SETTING (CONT'D)				
7-7C	VALVE RESET	GEAR INLET PRESSURE (PTO) GEAR DISCHARGE PRESSURE (PS) GEAR PRESSURE RISE (1350 ± 15 PSID) PUMP DISCHARGE FLOW (GPM) (WITHIN 0.2 GPM OF FLOW AT 7-7b(4))	N/A N/A N/A N/A		THESE TEST POINTS (PRESSURES AND SPEEDS) WERE PREVIOUSLY DEMONSTRATED ON THE SUNDSTRAND PUMP.
7-7C(4)					

William J. D. Dett  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. P. M. M. M.  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

M. M. M. M. M.  
FLOORING ACTIVITY

10 Oct 91  
DATE

CORRELATION DATA SHEET "C1" PAGE 13 OF 18  
 F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
 CONTRACT NO. F33657-84-C-2011  
 3C3965G05 FUEL PUMP TEST STAND  
 CIRL NO. 29084 REVISION B

PART NO. 1373MB7P07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-8	FILTER BYPASS VALVE CHECK				
7-8b(1)	IMPENDING BYPASS INDICATOR (TEST 1)	FILTER DELTA PRESSURE AT ACTUATION (20-25 PSID)	24.6	✓	
		FILTER BY-PASS FLOW (GPM) (4 GPM MAX)	1.9	✓	724 pph @ 74°
		RESETS PROPERLY	YES/NO	✓	
	IMPENDING BYPASS INDICATOR (TEST 2)	FILTER DELTA PRESSURE AT ACTUATION (20-25 PSID MIN)		N/A	TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TESTS WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
		FILTER BY-PASS FLOW (GPM) (4 GPM MAX)		N/A	
		RESETS PROPERLY	YES/NO	N/A	
	IMPENDING BYPASS INDICATOR (TEST 3)	FILTER DELTA PRESSURE AT ACTUATION (20-25 PSID MIN)		N/A	
		FILTER BY-PASS FLOW (GPM) (4 GPM MAX)		N/A	
		RESETS PROPERLY	YES/NO	N/A	

William J. Dill  
 CONTRACTOR ENGINEERING

10/2/91  
 DATE

J. C. Miller  
 TEST STAND ENGINEER

12/14/91  
 DATE

CONTRACTOR QUALITY

DATE

William J. Dill  
 PROOFING ACTIVITY

12/14/91  
 DATE

CORRELATION DATA SHEET "C1" PAGE 14 OF 18

FL10-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CURL NO. 29084 REVISION B

PART NO. 1373MB7F07 S/N ATC 00025

T.O. PARAGRAPH NO.	FILTER BYPASS VALVE CHECK CONTINUED DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-8b(2) (b)	ACTUAL INDICATOR & BYPASS VALVE CHECK BEFORE CRACKING INDICATOR (TEST 1)	FILTER DELTA PRESSURE (45 PSID MIN)	45.5	✓	767pph @ 74°
		FILTER BY-PASS FLOW (GPM)	2.0	✓	
		RESETS PROPERLY	YES/NO	✓	
	ACTUAL INDICATOR & BYPASS VALVE CHECK BEFORE CRACKING INDICATOR (TEST 2)	FILTER DELTA PRESSURE (45 PSID MIN)		N/A	TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TESTS WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
		FILTER BY-PASS FLOW (GPM)		N/A	
		RESETS PROPERLY	YES/NO	N/A	
	ACTUAL INDICATOR & BYPASS VALVE CHECK BEFORE CRACKING INDICATOR (TEST 3)	FILTER DELTA PRESSURE (45 PSID MIN)		N/A	
		FILTER BY-PASS FLOW (GPM)		N/A	
		RESETS PROPERLY	YES/NO	N/A	

William J. DeWitt  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. C. M. M. M.  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

William J. DeWitt  
FLOORING ACTIVITY

10/10/91  
DATE

CORRELATION DATA SHEET "C1" PAGE 15 OF 18

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CURL NO. 29084 REVISION B

PART NO. 137MB7P07 S/N ATC 00025

T.O. PARAGRAPH NO.	FILTER BYPASS VALVE CHECK CONTINUED DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-8b(2)(c)	ACTUAL INDICATOR & BYPASS VALVE CHECK AFTER CRACKING INDICATOR (TEST 1)	FILTER DELTA PRESSURE (35 PSID MIN)	44	✓	
		FILTER BY-PASS FLOW (GPM) (6 GPM MIN)	6.5	✓	2450pph @ 76°
		RESETS PROPERLY	YES/NO	✓	
	ACTUAL INDICATOR & BYPASS VALVE CHECK AFTER CRACKING INDICATOR (TEST 2)	FILTER DELTA PRESSURE (35 PSID MIN)		N/A	TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TESTS WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
		FILTER BY-PASS FLOW (GPM) (6 GPM MIN)		N/A	
		RESETS PROPERLY	YES/NO	N/A	
	ACTUAL INDICATOR & BYPASS VALVE CHECK AFTER CRACKING INDICATOR (TEST 3)	FILTER DELTA PRESSURE (35 PSID MIN)		N/A	
		FILTER BY-PASS FLOW (GPM) (6 GPM MIN)		N/A	
		RESETS PROPERLY	YES/NO	N/A	

J. Williams  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. Williams  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

W. Williams  
PROCURING ACTIVITY

10 Oct 91  
DATE

CORRELATION DATA SHEET "C1" PAGE 16 OF 18

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CDRL NO. 29084 REVISION B

PART NO. 137MB7P07 S/N ATC 0025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-10	SECONDARY GREEN RUN				
	THE SECONDARY GREEN RUN WILL NOT BE PERFORMED FOR THE QUALIFICATION TEST BECAUSE IT REQUIRES THAT PUMP BE DISASSEMBLED, INSPECTED AND REASSEMBLED. THIS WOULD INVALIDATE THE VENDOR DATA THAT WE NOW HAVE FOR QUALIFICATION.				
	THE DATA POINTS TO BE RUN ARE BASICALLY A SAMPLING OF THE SAME DATA POINTS RUN DURING THE PRIMARY GREEN.				

William J. Lohr  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. P. Mon  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

W. J. Lohr  
PROCURING ACTIVITY

10 Oct 91  
DATE

CORRELATION DATA SHEET "C1" PAGE 17 OF 18

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CURL NO. 29084 REVISION B

PART NO. 1373487R07 S/N ATC 00025

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-11	ANTI-DRAIN VALVE CHECK				
7-11b(6)	LEAKAGE AT 2.5 PSIG (OCM)	2 OCM MAX	N/A		TEST STAND CAPABILITY WAS DEMONSTRATED ON THE SUNOSTRAND PUMP.
7-12	PUMP CALIBRATION				
	OPERATION AT 6307 RPM				
		BOOST PRESSURE RISE (PSID) (40 PSID MIN)	54.44	✓	
		FILTER DIFF. PRESS. (PSID) (22 PSID MAX) (2324 IN-H <sub>2</sub> O 90°F)	N/A		
		PUMP TOTAL FLOW (GPM) (62 GPM MIN)	24400 <sup>ph</sup>	✓	
		PUMP TORQUE (IN-LB) (23324 IN-LB 90°F)	669	✓	
		FUEL SEAL LEAKAGE (OCM) (0.1 OCM MAX)	Ø	✓	

William J. Delaney  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. J. [Signature]  
TEST STAND ENGINEER

10/16/91  
DATE

CONTRACTOR QUALITY

DATE

W. J. Delaney  
INSPECTING ACTIVITY

10/2/91  
DATE



CORRELATION DATA SHEET "C1" PAGE 18 OF 18

F110-GE-129 MAIN FUEL PUMP

PART NO. 137787P07 S/N ATC 00025

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-12 CONT'D	PUMP CALIBRATION (CONT'D) OPERATION AT 4128 RPM	PUMP TOTAL FLOW (GPM) (42 GPM MIN) (15834 RPM @ 85°) PUMP TORQUE (IN-LB) (180 IN-LB MAX) FUEL SEAL LEAKAGE (CCM) (0.1 CCM MAX)	16538 <sup>gph</sup> 165 Ø	✓ ✓ ✓	
	OPERATION AT 886 RPM	PUMP TOTAL FLOW (GPM) (7.5 GPM MIN) (2824 RPM @ 85°) PUMP TORQUE (IN-LB) (185 IN-LB MAX) FUEL SEAL LEAKAGE (CCM) (0.1 CCM MAX)	3269 104 Ø	✓ ✓ ✓	

William C. DeMott  
CONTRACTOR ENGINEERING

10/2/21  
DATE

John M. [Signature]  
TEST STAND ENGINEER

10/10/21  
DATE

CONTRACTOR QUALITY

DATE

[Signature]  
PROCURING ACTIVITY

10/20/21  
DATE

CORRELATION DATA SHEET "C2" PAGE 1 OF 5

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

PART NO. 1457ML3P03 S/N SUS 0C153

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-2c	PRESSURE RELIEF VALVE TESTS				
7-2c(2)	TOTAL FLOW WITH RELIEF PLUG	N/A	25,435 gph	✓	
7-2c(5)c	RELIEF VALVE INSTALLED	1400 - 1500 PSID	1423	✓	
7-2c(5)d	VALVE RESET	N/A	25,510	✓	
7-2c(5)e	DIFF. BETWEEN 7-2c(2) AND 7-2c(5)d	193 FPH (0.5 GPM) MAX	75	✓	
7-2d	INDICATOR AND ACTUAL BYPASS VALVE SEQUENCING (IN PUMP)				
7-2d(5)	IMPENDING BYPASS INDICATOR DELTA P	RUN #1 20 - 30 PSID RUN #2 20 - 30 PSID RUN #3 20 - 30 PSID	25 N/A N/A	✓ ✓ ✓	

William J. Smith  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J.P. Muen  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

William J. Smith  
PROOFING ACTIVITY

10 Oct 91  
DATE

CORRELATION DATA SHEET "C2" PAGE 2 OF 5

FL10-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CURL NO. 29084 REVISION B

PART NO. 1457ML3P03 S/N SUS 0C15-3

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-2d(6)	INDICATOR AND ACTUAL BYPASS VALVE SEQUENCING (CONT'D) ACTUAL BYPASS INDICATOR DELTA P	RUN #1 40 - 55 PSID	47	✓	
		RUN #2 40 - 55 PSID	N/A		
		RUN #3 40 - 55 PSID	N/A		
7-2d(7)	ACTUAL BYPASS INDICATOR ACTUATION ACCEPTABLE	RUN #1	YES/NO	✓	TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TESTS WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
		RUN #2	YES/NO	N/A	
		RUN #3	YES/NO	N/A	
7-2e 7-2e(2)b	INDICATOR RESETTNG ACTUAL BYPASS INDICATOR RESET ACCEPTABLE	RUN #1	YES/NO	✓	
		RUN #2	YES/NO	N/A	
		RUN #3	YES/NO	N/A	

J. Williams  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. Williams  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

M. Williams  
PROCURING ACTIVITY

10/2/91  
DATE

CORRELATION DATA SHEET "C2" PAGE 3 OF 5

FL10-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

PART NO. 1457ML3F03 S/N SUS 0C153

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-2e(3)b	INDICATOR RESETTING CONT'D IMPENDING BYPASS IND. RESET ACCEPTABLE	RUN #1 RUN #2 RUN #3	<u>YES/NO</u> YES/NO YES/NO	<u>✓</u> N/A N/A	TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TEST WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
7-2f(2)	SERVICE SHUT-OFF VALVE LEAKAGE	2 OCM MAX	0	✓	
7-2h(1)	FUEL SHAFT SEAL STATIC LEAKAGE @ 0 PSIG INLET	0.1 OCM MAX	0	✓	
7-2g(1)	OIL SEAL LEAKAGE @ 50 PSIG	0.1 OCM MAX	0	✓	

William J. Duluth  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. E. Moore  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

William J. Duluth  
PROCURING ACTIVITY

10/2/91  
DATE

CORRELATION DATA SHEET "C2" PAGE 4 OF 5

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

PART NO. 1457ML3P03 S/N SUS OC153

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
7-21	PERFORMANCE CALIBRATION				
	CONDITION A AT 6307 RPM				
	PUMP TOTAL FLOW (PPH)	24914 PPH MIN (65.3 GPM)	24881	✓	
	BOOST PRESSURE RISE (PSID)	40 PSID MIN	43.64	✓	
	PUMP INPUT TORQUE (IN-LB)	691 IN-LB MAX	686	✓	
	FUEL SHAFT SEAL LEAKAGE	0.1 OCM MAX	Ø	✓	
	FILTER PRESSURE DROP (PSID)	22.0 PSID MAX	N/A	.	

William D. DeWitt  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. Eric Mann  
TEST STAND ENGINEER

9/10/91  
DATE

CONTRACTOR QUALITY

DATE

William D. DeWitt  
FLOORING ACTIVITY

10 Oct 71  
DATE



SUBASSEMBLY DATA SHEET "C4" PAGE 1 OF 1

F110-GE-129 MAIN FUEL PUMP  
IMPENDING BYPASS INDICATOR

PART NO. 5907807 S/N SUS OC 153

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
	IMPENDING BYPASS INDICATOR TEST (IN FIXTURE)	TEST 1 ACTUATION (20-25 PSI MAX) RESET	24	✓	
		TEST 2 ACTUATION (20-25 PSI MAX) RESET	YES	✓	TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TESTS WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
		TEST 3 ACTUATION (20-25 PSI MAX) RESET	N/A		
			N/A		
			N/A		
			N/A		

William L. D. Datt  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. E. M. M.  
TEST STAND ENGINEER

10/6/91  
DATE

CONTRACTOR QUALITY

DATE

W. L. D. Datt  
PROJECTING ACTIVITY

10/6/91  
DATE

SUBASSEMBLY DATA SHEET "C5" PAGE 1 OF 1  
 F110-GE-129 MAIN FUEL PUMP  
 ACTUAL BY-PASS INDICATOR

QUALIFICATION TEST PROCEDURE  
 CONTRACT NO. F33657-84-C-2011  
 3C3965G05 FUEL PUMP TEST STAND  
 CTRL NO. 29084 REVISION B

PART NO. 5907808 S/N SUS OC 153

T.O. PARAGRAPH NO.	DESCRIPTION	ACCEPTANCE LIMITS	RESULTS	ACCEPT	REMARKS
	ACTUAL BYPASS INDICATOR TEST (IN FIXTURE)	TEST 1 ACTUATION (20-25 PSI MAX) RESET	24 YES	✓ ✓	
		TEST 2 ACTUATION (20-25 PSI MAX) RESET	N/A N/A		TEST STAND CAPABILITY WAS DEMONSTRATED WITH THE FIRST RUN. SUBSEQUENT TESTS WOULD ONLY BE TESTING THE INDICATOR AND WERE DEEMED UNNECESSARY.
		TEST 3 ACTUATION (20-25 PSI MAX) RESET	N/A N/A		

J. J. J. J.  
 CONTRACTOR ENGINEERING

10/2/91  
 DATE

J. J. J. J.  
 TEST STAND ENGINEER

10/10/91  
 DATE

CONTRACTOR QUALITY

DATE

M. J. J. J.  
 RECORDING ACTIVITY

R. J. J. J.  
 DATE



QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CDRL NO. 29084 REVISION A

APPENDIX "D"

CORRELATION DATA ANALYSIS

AND

ACCEPTANCE FOR

F110-GE-129

"D1" MAIN FUEL PUMP P/N 1373M87P07  
"D2" MAIN FUEL PUMP P/N 1457M13P03

QUALIFICATION TEST PROCEDURE  
 CONTRACT NO. F33657-84-C-2011  
 3C3965G05 FUEL PUMP TEST STAND  
 CIRL NO. 29084 REVISION B

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 1 OF 16  
 F110-GE-129 MAIN FUEL PUMP

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. MOSS

T.O. PARAGRAPH	CORRELATION TOLERANCE ABOUT AVG.	CORRELATION LIMITS			ACTUAL DATA	ACCEPT	REJECT
		RUN 1	RUN 2	RUN 3			
7-4	OIL SEAL CHECK						
7-4b(5)	OIL LEAKAGE @ 55±5 PSIG (OCH)				0		
7-6	PRIMARY GREEN RUN						
7-6b(2)	3 MINUTE RUN AT 3000 RPM						
	DISCH. PRESS. (200 ± 20 PSIG)				N/A		
	INLET PRESS. (30 ± 5 PSIG)				N/A		
	BOOST STAGE DISCH. PRESS. (PSIG)				N/A		
	FIR. OUT PRESS. (PSIG)				N/A		
	DISCH. FLOW (GPM)				N/A		
	SHAFT TORQUE (IN.-LB.)				N/A		

William J. Dillert 10/2/91 10/6/91  
 CONTRACTOR ENGINEERING DATE  
 TEST STAND ENGINEER DATE  
Bill Moss 10/2/91 10/6/91  
 PROOFING ACTIVITY DATE

QUALIFICATION TEST PROCEDURE  
 CONTRACT NO. F33657-84-C-2011  
 3C3965G06 FUEL PUMP TEST STAND  
 CDRL NO. 29084 REVISION B

DATA ANALYSIS AND ACCEPTANCE SHEET "DL" PAGE 2 OF 16

F110-GE-129 MAIN FUEL PUMP

TEST OPERATOR E. Moss

P/N 1373WB7P07 S/N ATC 00025 DATE 9/25/91

P/N 1373WB7P07	S/N	H1C 00023			47			
T.O. PARAGRAPH	CORRELATION TOLERANCE ABOUT AVG.			CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT	
	RUN 1	RUN 2	RUN 3					AVG.
PRIMARY GREEN RUN (CONT'D)								
7-6b(2)	1 MINUTE RUN AT 3000 RPM							
	DISCH. PRESS. (300 ± 20 PSIG)			—	—	—	N/A	N/A
	INLET PRESS. (30 ± 5 PSIG)			—	—	—	N/A	N/A
	BOOST STAGE			—	—	—	N/A	N/A
	DISCH. PRESS. (PSIG)			—	—	—	N/A	N/A
	FLTR. OUT PRESS. (PSIG)			—	—	—	N/A	N/A
	DISCH. FLOW (GPM)			—	—	—	N/A	N/A
	SHAFT TORQUE (IN.-LB.)			—	—	—	N/A	N/A
	1 MINUTE RUN AT 5000 RPM							
	DISCH. PRESS. (300 ± 20 PSIG)			—	—	—	N/A	N/A
INLET PRESS. (30 ± 5 PSIG)			—	—	—	N/A	N/A	
BOOST STAGE			—	—	—	N/A	N/A	
DISCH. PRESS. (PSIG)			—	—	—	N/A	N/A	

J. L. P. P. P. 10/2/91 10/14/91  
 CONTRACTOR ENGINEERING DATE TEST STAND ENGINEER DATE  
10/14/91 10/14/91  
 FLOORING ACTIVITY DATE

CONTRACTOR QUALITY

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 3 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

P/N 1373867P07

S/N ATC 00025

DATE

9/25/91

TEST OPERATOR

E. Moss

T.O. PARAGRAPH	CORRELATION TOLERANCE ABOUT AVG.	CORRELATION LIMITS			ACTUAL DATA		ACCEPT REJECT	
		RUN 1	RUN 2	RUN 3	AVG.			
7-6b(2) CONT'D	PRIMARY GREEN RUN (CONT'D)							
	FLTR. OUT PRESS. (PSIG)					N/A	N/A	
	DISCH. FLOW (GPM)					N/A	N/A	
	SHAFT TORQUE (IN.-LB.)					N/A	N/A	
	1 MINUTE RUN AT 5000 RPM							
	DISCH. PRESS. (400 ± 20 PSIG)					N/A	403	
	INLET PRESS. (30 ± 5 PSIG)					N/A	30.24	
	BOOST STAGE DISCH. PRESS. (PSIG)					N/A	26.74	
	FLTR. OUT PRESS. (PSIG)					N/A	37.10	
	DISCH. FLOW (GPM)					N/A	53.2	
	SHAFT TORQUE (IN.-LB.)					N/A	243	

2/11/91  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. E. Moss  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

M. J. Moss  
PROOFING ACTIVITY

10/2/91  
DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "DI" PAGE 4 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CDRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025

DATE 9/25/91

TEST OPERATOR E. moss

T.O. PARAGRAPH	CORRELATION					ACTUAL DATA	ACCEPT	REJECT
	TOLERATION ABOUT AVG.	CORRELATION LIMITS	RUN 1	RUN 2	RUN 3			
PRIMARY GREEN RUN (CONT'D)								
7-6b(2) CONT'D	1 MINUTE RUN AT 6000 RPM							
	DISCH. PRESS. (400 ± 20 PSIG)	N/A				N/A		
	INLET PRESS. (30 ± 5 PSIG)	N/A				N/A		
	BOOST STAGE DISCH. PRESS. (PSIG)	N/A				N/A		
	FLTR. OUT PRESS. (PSIG)	N/A				N/A		
	DISCH. FLOW (GPM)	N/A				N/A		
	SHAFT TORQUE (IN.-LB.)	N/A				N/A		
	1 MINUTE RUN AT 6000 RPM							
	DISCH. PRESS. (500 ± 20 PSID)	N/A				N/A		
	INLET PRESS. (30 ± 5 PSIG)	N/A				N/A		
	BOOST STAGE DISCH. PRESS. (PSIG)	N/A				N/A		

CONTRACTOR ENGINEERING

DATE 10/2/91

TEST STAND ENGINEER

DATE 10/10/91

CONTRACTOR QUALITY

DATE

HOODING ACTIVITY

DATE 10/2/91

FL10-GE-129 MAIN FUEL PMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PMP TEST STAND  
CURL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. NOSS

T.O. PARAGRAPH	CORRELATION TOLERATION ABOUT AVG.				CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	RUN 1	RUN 2	RUN 3	AVG.				
PRIMARY GREEN RUN (CONT'D)								
7-60(2) CONT'D	FLTR. OUT. PRESS. (PSIG)	—	—	—	N/A	40.72	—	—
	DISCH. FLOW (GPM)	—	—	—	N/A	63.8	—	—
	SHAFT TORQUE (FT.-LB.)	—	—	—	N/A	311	—	—
	2 MINUTE RUN AT 1000 RPM							
	DISCH. PRESS. (200 ± 20 PSIG)	—	—	—	N/A	205	—	—
	INLET PRESS. (30 ± 5 PSIG)	—	—	—	N/A	28.77	—	—
	BOOST STAGE							
	DISCH. PRESS. (PSIG)	—	—	—	N/A	1.64	—	—
	FLTR. OUT PRESS. (PSIG)	—	—	—	N/A	29.46	—	—
	DISCH. FLOW (GPM)	—	—	—	N/A	10.0	—	—
	SHAFT TORQUE (IN.-LB.)	—	—	—	N/A	80	—	—

William J. Dillhoff  
CONTRACTOR ENGINEERING

DATE 10/2/91

J. L. Hahn  
TEST STAND ENGINEER

DATE 10/10/91

CONTRACTOR QUALITY

DATE

M. J. Hahn  
PROCURING ACTIVITY

DATE 10/25/91

FL10-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

P/N 1373WB7P07

S/N ATC 00025

DATE

9/25/91

TEST OPERATOR E. MOSS

T.O. PARAGRAPH		CORRELATION TOLERANCE ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-6b(2) CONT'D	PRIMARY GREEN RUN (CONT'D)					
	2 MINUTE RUN AT 1000 RPM					
	DISCH. PRESS. (600 ± 20 PSIG)	N/A	N/A	601		
	INLET PRESS. (30 ± 5 PSIG)	N/A	N/A	29.88		
	BOOST STAGE DISCH. PRESS. (PSIG)	N/A	N/A	1.98		
	FTHR. OUT PRESS. (PSIG)	N/A	N/A	29.98		
	DISCH. FLOW (GPM)	N/A	N/A	9.1		
	SHAFT TORQUE (IN.-LB.)	N/A	N/A	246		
	1 MINUTE RUN AT 4000 RPM					
	DISCH. PRESS. (300 ± 20 PSIG)	N/A	N/A	302		
	INLET PRESS. (30 ± 5 PSIG)	N/A	N/A	28.48		
	BOOST STAGE DISCH. PRESS. (PSIG)	N/A	N/A	18.00		

CONTRACTOR QUALITY

10/2/91  
DATE

TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

PROOFING ACTIVITY

10/10/91  
DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 7 OF 16

FL10-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

P/N 1373MB7P07

S/N ATC 00025

DATE

9/25/91

TEST OPERATOR

E. MOSS

T.O. PARAGRAPH	CORRELATION TOLERANCE ABOUT AVG.	CORRELATION LIMITS			ACTUAL DATA		ACCEPT		REJECT
		RUN 1	RUN 2	RUN 3	AVG.				
7-60(2) CONT'D	PRIMARY GREEN RUN (CONT'D)								
	FLTR. OUT PRESS. (PSIG)					N/A	33.3		
	DISCH. FLOW (GPM)					N/A	42.4		
	SHAFT TORQUE (IN.-LB.)					N/A	174		
	1 MINUTE RUN AT 4000 RPM								
	DISCH. PRESS. (700 ± 20 PSIG)					N/A	708		
	INLET PRESS. (30 ± 5 PSIG)					N/A	28.53		
	BOOST STAGE DISCH. PRESS. (PSIG)					N/A	46.58		
	FLTR. OUT PRESS. (PSIG)					N/A	33.49		
	DISCH. FLOW (GPM)					N/A	41.6		
	SHAFT TORQUE (IN.-LB.)					N/A	343		

William L. Gellert  
CONTRACTOR ENGINEERING

10/2/91  
DATE

William L. Gellert  
TEST STAND ENGINEER

10/10/91  
DATE

CONTRACTOR QUALITY

DATE

William L. Gellert  
PROCURING ACTIVITY

10 Oct 91  
DATE



DATA ANALYSIS AND ACCEPTANCE SHEET "DI" PAGE 8 OF 16

FL10-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CDRL NO. 29084 REVISION B

P/N 1373487P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. MISS

T.O. PARAGRAPH	CORRELATION					ACTUAL DATA	ACCEPT	REJECT
	RUN 1	RUN 2	RUN 3	AVG.	TOLERATION ABOUT AVG.			
7-6b(2) CONT'D	PRIMARY GREEN RUN (CONT'D)							
	1 MINUTE RUN AT 5000 RPM							
	DISCH. PRESS. (300 ± 20 PSIG)				N/A	<u>304</u>		
	INLET PRESS. (30 ± 5 PSIG)				N/A	<u>28.87</u>		
	BOOST STAGE DISCH. PRESS. (PSIG)				N/A	<u>55.85</u>		
	FILTR. OUT PRESS. (PSIG)				N/A	<u>36.62</u>		
	DISCH. FLOW (GPM)				N/A	<u>53.3</u>		
	SHAFT TORQUE (IN.-LB.)				N/A	<u>200</u>		
	1 MINUTE RUN AT 5000 RPM							
	DISCH. PRESS. (800 ± 20 PSIG)				N/A	<u>803</u>		
	INLET PRESS. (30 ± 5 PSIG)				N/A	<u>29.21</u>		
	BOOST STAGE DISCH. PRESS. (PSIG)				N/A	<u>55.95</u>		

J. Williams  
CONTRACTOR ENGINEERING

DATE 10/2/91

J. Williams  
TEST STAND ENGINEER

DATE 10/10/91

CONTRACTOR QUALITY

DATE

J. Williams  
PROCURING ACTIVITY

DATE 10/10/91

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 9 OF 16

FL10-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CDRL NO. 29084 REVISION B

TEST OPERATOR E. mass

DATE 9/25/91

P/N 1373487P07 S/N ATC 00025

T.O. PARAGRAPH	CORRELATION TOLERANCE ABOUT AVG.	CORRELATION LIMITS			ACTUAL DATA			ACCEPT REJECT		
		RUN 1	RUN 2	RUN 3	AVG.					
7-60(2) CONT'D	PRIMARY GREEN RUN (CONT'D)									
	FLTR. OUT PRESS. (PSIG)					N/A		<u>37.50</u>		
	DISCH. FLOW (GPM)					N/A		<u>52.3</u>		
	SHAFT TORQUE (IN.-LB.)					N/A		<u>405</u>		
	1 MINUTE RUN AT 6307 RPM									
	DISCH. PRESS. (400 ± 20 PSIG)					N/A		<u>401</u>		
	INLET PRESS. (30 ± 5 PSIG)					N/A		<u>29.21</u>		
	BOOST STAGE DISCH. PRESS. (PSIG)					N/A		<u>70.80</u>		
	FLTR. OUT PRESS. (PSIG)					N/A		<u>40.52</u>		
	DISCH. FLOW (GPM)					N/A		<u>67.2</u>		
	SHAFT TORQUE (IN.-LB.)					N/A		<u>285</u>		

J. M. J. J. J.  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. E. J. J.  
TEST STAND ENGINEER

10/1/91  
DATE

CONTRACTOR QUALITY

DATE

J. E. J. J.  
HOOKING ACTIVITY

10/1/91  
DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "DI" PAGE 10 OF 16

FL10-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CRL NO. 29084 REVISION B

P/N 137387P07 S/N ATC 00025 DATE 9/25/91 TEST OPERATOR E. MOSS

T.O. PARAGRAPH	CORRELATION TOLERANCE ABOUT AVG.	CORRELATION LIMITS			ACTUAL DATA			ACCEPT REJECT		
		RUN 1	RUN 2	RUN 3	AVG.					
7-60(2) CONT'D	PRIMARY GREEN RUN (CONT'D)									
	2 MINUTE RUN AT 6307 RPM									
	DISCH. PRESS. (1100 ± 20 PSIG)					N/A		1103		
	INLET PRESS. (30 ± 5 PSIG)					N/A		29.85		
	BOOST STAGE DISCH. PRESS. (PSIG)					N/A		72.26		
	FLTR. OUT PRESS. (PSIG)					N/A		43.77		
	DISCH. FLOW (GPM)					N/A		65.6		
	SHAFT TORQUE (IN.-LB.)					N/A		574		
	15 SEC. MAX. RUN AT 6307 RPM									
	DISCH. PRESS. (1400 ± 20 PSIG)					N/A		1401		
	INLET PRESS. (30 ± 5 PSIG)					N/A		29.84		
	BOOST STAGE DISCH. PRESS. (PSIG)					N/A		44		

CONTRACTOR ENGINEERING 10/2/91 DATE  
 CONTRACTOR QUALITY 10/2/91 DATE  
 TEST STAND ENGINEER 10/2/91 DATE  
 PROCURING ACTIVITY 10/2/91 DATE

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

P/N 1373M87P07

S/N ATC 00025

DATE

9/25/91

TEST OPERATOR E. MOSS

T.O. PARAGRAPH	CORRELATION TOLERANCE ABOUT AVG.	CORRELATION			ACTUAL DATA	ACCEPT	REJECT
		LIMITS	DATA	REJECT			
7-Gb(2) CONT'D	PRIMARY GREEN RUN (CONT'D)						
	FLTR. OUT PRESS. (PSIG)	N/A			<u>73.14</u>		
	DISCH. FLOW (GPM)	N/A			<u>64.7</u>		
	SHAFT TORQUE (IN.-LB.)	N/A			<u>695</u>		
	2 MINUTE RUN AT 590 RPM						
	DISCH. PRESS. (275 ± 20 PSIG)	N/A			<u>N/A</u>		
	INLET PRESS. (30 ± 5 PSIG)	N/A			<u>N/A</u>		
	BOOST STAGE DISCH. PRESS. (PSIG)	N/A			<u>N/A</u>		
	FLTR. OUT PRESS. (PSIG)	N/A			<u>N/A</u>		
	DISCH. FLOW (GPM)	N/A			<u>N/A</u>		
	SHAFT TORQUE (IN.-LB.)	N/A			<u>N/A</u>		

William J. Duff  
CONTRACTOR/ENGINEERING

10/2/91  
DATE

John P. Parn  
TEST STAND ENGINEER

10/14/91  
DATE

CONTRACTOR QUALITY

DATE

William J. Duff  
PROOING ACTIVITY

10/2/91  
DATE

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
 CONTRACT NO. F33657-84-C-2011  
 3C3965G06 FUEL PUMP TEST STAND  
 CDRL NO. 29084 REVISION B

P/N 137MB7P07 S/N ATC 00025 DATE 9/24/91 TEST OPERATOR E. mass

T.O. PARAGRAPH	RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-7	PRESS. RELIEF VALVE SETTING								
7-7b	RELIEF PLUG INSTALLED:								
	GEAR INLET PRESS. (PFO) PSIG				N/A	N/A	N/A		
	GEAR DISCH. PRESS. (PS) PSIG				N/A	N/A	N/A		
	GEAR PRESS. RISE (PS-PFO) PSID				N/A	N/A	N/A		
7-7b(4)	PUMP DISCH. FLOW (GPM)				N/A	N/A	N/A		
7-7c	VALVE CRACKED:								
	GEAR INLET PRESS. (PRO) PSIG				N/A	N/A	N/A		
	GEAR OUTLET PRESS. (PS) PSIG				N/A	N/A	N/A		
	GEAR PRESS. RISE (PS-PFO) PSID				N/A	N/A	N/A		
7-7c(3)	PUMP DISCH. FLOW (GPM)				N/A	N/A	N/A		

J. J. [Signature] CONTRACTOR ENGINEERING DATE 10/2/91  
 J. J. [Signature] TEST STAND ENGINEER DATE 10/2/91  
 J. J. [Signature] PROOFING ACTIVITY DATE 10/2/91  
 CONTRACTOR QUALITY DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 13 OF 16

FL10-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CDRL NO. 29084 REVISION B

TEST OPERATOR E. Moss

P/N 1373MB7P07 S/N ATC 00025 DATE 9/24/91

T.O. PARAGRAPH	CORRELATION TOLERATION ABOUT AVG.				CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	RUN 1	RUN 2	RUN 3	AVG.				
PRESS. RELIEF VALVE SETTING (CONT'D)								
7-7c(4)	VALVE RESETTED:							
	GEAR INLET PRESS. (PFO) PSIG	_____	_____	_____	N/A	N/A	N/A	_____
	GEAR DISCH. PRESS. (PS) PSIG	_____	_____	_____	N/A	N/A	N/A	_____
	PUMP DISCH. FLOW (GPM)	_____	_____	_____	N/A	N/A	N/A	_____
	FLOW (GPM) (7-7b(4) TO 7-7c(4)) (0.5 GPM MAX)	_____	_____	_____	N/A	N/A	N/A	_____

J. J. Miller 10/2/91 10/10/91  
 CONTRACTOR ENGINEERING DATE  
 TEST STAND ENGINEER DATE  
W. J. Miller 10/2/91 10/2/91  
 FLOORING ACTIVITY DATE

CONTRACTOR QUALITY

DATA ANALYSIS AND ACCEPTANCE SHEET "DI" PAGE 14 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

TEST OPERATOR E. moss

DATE 9/24/91

S/N ATC 00025

P/N 1373M87P07

T.O. PARAGRAPH	CORRELATION TOLERANCE ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-8					
FILTER BYPASS VALVE CHECK					
7-8b(1)	IMPENDING BYPASS INDICATOR				
	ACTUATION DELTA P (PFI-PFO)	N/A	<u>24.6</u>		
	FILTER BYPASS FLOW (GPM)	N/A	<u>1.9</u>		
7-8b(2)	RESETS PROPERLY	N/A	<u>YES/NO</u>		
	ACTUAL BYPASS INDICATOR (BEFORE CRACKING)				
	ACTUATION DELTA P (PFI-PFO)	N/A	<u>45.5</u>		
	FILTER BYPASS FLOW (GPM)	N/A	<u>2.0</u>		
	RESETS PROPERLY	N/A	<u>YES/NO</u>		
	ACTUAL BYPASS INDICATOR (AFTER CRACKING)				
	ACTUATION DELTA P (PFI-PFO)	N/A	<u>44.0</u>		
	FILTER BYPASS FLOW (GPM)	N/A	<u>6.5</u>		
	RESETS PROPERLY	N/A	<u>YES/NO</u>		

William J. Delaney  
CONTRACTOR ENGINEERING

DATE 10/2/91

John Moss  
TEST STAND ENGINEER

DATE 10/16/91

CONTRACTOR QUALITY

DATE

William J. Delaney  
FLOORING ACTIVITY

DATE 10/2/91





DATA ANALYSIS AND ACCEPTANCE SHEET "D1" PAGE 16 OF 16

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CIRL NO. 29084 REVISION B

P/N 1373MB7P07 S/N ATC 00025 DATE 9/23/91 TEST OPERATOR E. MOSS

T.O. PARAGRAPH	CORRELATION TOLERANCE ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
7-12 CONT'D					
PUMP CALIBRATION (CONT'D)					
4128RPM					
PUMP TOTAL FLOW (GPM)	$\pm 1.89$	16228-16606	16538	✓	
PUMP TORQUE (IN-LB)	$\pm 6.0$	157.5-169.5	165	✓	
FUEL SEAL LEAKAGE (CCM)	0.1 MAX	N/A	0	✓	
886RPM					
PUMP TOTAL FLOW (GPM)	$\pm 1.89$	2985-3363	3269	✓	
PUMP TORQUE (IN-LB)	$\pm 6.0$	101.9-113.9	109.9	✓	
FUEL SEAL LEAKAGE (CCM)	0.1 MAX	N/A	0	✓	

J. J. Moore TEST STAND ENGINEER 10/10/91 DATE  
W. J. Moore FLOORING ACTIVITY 10/10/91 DATE  
J. J. Moore CONTRACTOR/ENGINEERING 10/10/91 DATE  
W. J. Moore CONTRACTOR QUALITY 10/10/91 DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D2" PAGE 1 OF 3

F110-GE-129 MAIN FUEL PUMP

P/N 1457M13P03

S/N SUS OC 153

DATE

9/29/91

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CURL NO. 29084 REVISION B  
TEST OPERATOR E. MOSS

T.O. PARAGRAPH	CORRELATION				CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	RUN 1	RUN 2	RUN 3	AVG.				
PRESSURE RELIEF VALVE TEST								
7-2c(2)	24980	24942	24980	24967	N/A	25,435		
7-2c(5)c	1430	1425	1425	1427	N/A	1423		
7-2c(5)d	24980	24942	24980	24967	N/A	25,510		
INDICATOR AND BYPASS VALVE SEQUENCING.								
7-2d(5)	23	23	24	23	N/A	25		
7-2d(6)	44	46	45	45	N/A	47		
7-2d(7)	/	/	/		N/A	YES/NO		
7-2e(2)b	/	/	/		N/A	YES/NO		
7-2e(3)b	/	/	/		N/A	YES/NO		

William J. DeWitt  
CONTRACTOR ENGINEERING

10/2/91  
DATE

J. G. Moore  
TEST STAND ENGINEER

10/6/91  
DATE

CONTRACTOR QUALITY

DATE

William J. DeWitt  
PROCURING ACTIVITY

10/2/91  
DATE

DATA ANALYSIS AND ACCEPTANCE SHEET "D2" PAGE 2 OF 3

F110-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CURL NO. 29084 REVISION B

P/N 1457M13P03 S/N SUS 0C 153 DATE 9/23/91

TEST OPERATOR E. MOSS

T.O. PARAGRAPH	RUN 1	RUN 2	RUN 3	AVG.	CORRELATION TOLERANCE ABOUT AVG.	CORRELATION	
						LIMITS	ACTUAL DATA
7-2f(2)					N/A	N/A	0
SHUT-OFF VALVE LEAKAGE (2 OCM MAX)							
FUEL AND OIL SHAFT SEAL LEAKAGE TESTS							
7-2g(2)					N/A	N/A	0
OIL SEAL LEAKAGE @ 50 PSIG (0.1 OCM MAX)							
7-2h(1)					N/A	N/A	0
FUEL SHAFT SEAL STATIC LEAKAGE AT 0 PSIG (0.1 OCM MAX)							
PERFORMANCE CALIBRATION							
CONDITION A							
7-2i	24942	25017	25054	25004	±188	24816-25192	24881 ✓
PUMP TOTAL FLOW - GPM							
	43	43	43	43	±2.0	41-45	43.64 ✓
BOOST PRESSURE RISE - PSID							
	676	686	682	681	±10	671-691	686 ✓
PUMP INPUT TORQUE - IN. LBS.							
	0	0	0	0	N/A	N/A	0 ✓
FUEL SHAFT SEAL LEAKAGE (OCM)							
	14	14	14	14	N/A	N/A	N/A ✓
FILTER PRESSURE DROP - PSID							

J. J. [Signature] 10/2/91 DATE  
 CONTRACTOR ENGINEERING  
J. J. [Signature] 10/2/91 DATE  
 TEST STAND ENGINEER  
[Signature] 10/2/91 DATE  
 RECORDING ACTIVITY

DATA ANALYSIS AND ACCEPTANCE SHEET "D2" PAGE 3 OF 3

FL10-GE-129 MAIN FUEL PUMP

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-84-C-2011  
3C3965G05 FUEL PUMP TEST STAND  
CDRL NO. 29084 REVISION B

P/N 1457M13P03 S/N SUS 0C153 DATE 9/23/91 TEST OPERATOR E. mass

T.O. PARAGRAPH	CORRELATION				CORRELATION TOLERATION ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
	RUN 1	RUN 2	RUN 3	AVG.					
PERFORMANCE CALIBRATION (CONT'D)									
7-2i cont'	CONDITION B								
	PUMP TOTAL FLOW - GPM								
	16732	16845	16808	16795	±189	16606-16984	16837	✓	
	FUEL SHAFT SEAL LEAKAGE (CCM)								
	0	0	0	0	N/A	N/A	0	✓	
	PUMP INPUT TORQUE - IN. LBS.								
	162	160	162	161	±6.0	155-167	160	✓	
	CONDITION C								
	PUMP TOTAL FLOW - GPM								
	3174	3174	3136	3161	±189	2972-3350	3118	✓	
	FUEL SHAFT SEAL LEAKAGE (CCM)								
	0	0	0	0	N/A	N/A	0	✓	
	PUMP INPUT TORQUE - IN. LBS.								
	118	112	112	114	±6.0	108-120	113 114.92MM	✓	

William J. Dillert 10/2/91 DATE  
 CONTRACTOR ENGINEERING  
 CONTRACTOR QUALITY DATE  
J.P. 26m 10/10/91 DATE  
 TEST STAND ENGINEER  
W. J. Dillert 10/10/91 DATE  
 PROOFING ACTIVITY

APPENDIX D

INSPECTION  
DATA SHEETS

QUALIFICATION TEST PROCEDURE  
 CONTRACT NO. F33657-84-C-2011  
 3C3965G05 FUEL PUMP TEST STAND  
 CDRL NO. 29084

DATA SHEET 4.2.1  
 WORKMANSHIP INSPECTIONS

	ACCEPT	REJECT	DATE
/ ASSEMBLY MATCHES DOCUMENTATION	<u>MC JEM</u>	_____	<u>10/10/91</u>
NO UNAUTHORIZED REPAIRS PERFORMED	<u>MC JEM</u>	_____	<u>26 Sep 91</u>
OR SUBSTITUTED PARTS			
GENERAL GOOD WORKMANSHIP	<u>MC JEM</u>	_____	<u>26 Sep 91</u>

COMMENTS

_____ CONTRACTOR ENGINEERING	_____ DATE	<u>J. Eric Wilson</u> TEST STAND ENGINEERING	<u>9/26/91</u> DATE
_____ CONTRACTOR QUALITY	_____ DATE	<u>ML JEM</u> 164, VME PROCURING ACTIVITY	<u>26 Sep 91</u> DATE

# QUALIFICATION TEST PROCEDURE

CONTRACT NO. F33657-84-C-2011

3C3965G05 FUEL PUMP TEST STAND

CDRL NO. 29084

## DATA SHEET 4.2.3 MARKING INSPECTIONS

	ACCEPT	REJECT	DATE
TEST STAND NAMEPLATE PROPERLY EXECUTED	<u>MC JEM</u>	_____	<u>26 Sep 91</u>
RETROFIT NAMEPLATES INSTALLED IN PROPER LOCATION & VERIFIED	<u>MC JEM</u>	_____	<u>26 Sep 91</u>
REMOVED NAMEPLATES DISCARDED	<u>MC JEM</u>	_____	<u>26 Sep 91</u>
LOOSE ITEMS PROPERLY IDENTIFIED AT SHIPMENT	<u>MC JEM</u>	_____	<u>26 Sep 91</u>
NAMEPLATES CONFORM TO PURCHASER'S DRAWING IN LOCATION AND CONTENT	<u>MC JEM</u>	_____	<u>26 Sep 91</u>
NEW RETRO-FIT PARTS PROPERLY IDENTIFIED	<u>MC JEM</u>	_____	<u>26 Sep 91</u>

### COMMENTS

\_\_\_\_\_  
CONTRACTOR ENGINEERING

\_\_\_\_\_  
DATE

J. Eric Wilson  
TEST STAND ENGINEERING

9/26/91  
DATE

\_\_\_\_\_  
CONTRACTOR QUALITY

\_\_\_\_\_  
DATE

M. J. White 116,000  
PROCURING ACTIVITY

26 Sep 91  
DATE

QUALIFICATION TEST PROCEDURE  
 CONTRACT NO. F33657-84-C-2011  
 3C3965G05 FUEL PUMP TEST STAND  
 CDRL NO. 29084

- DATA SHEET 4.2.4  
 NEATNESS INSPECTIONS

	ACCEPT	REJECT	DATE
PANELS REPLACED AND SECURED	<u>MLC JRM</u>	_____	<u>26 Sep 91</u>
INSTRUMENTATION RETURNED CONNECTED & SECURED IN PLACE	<u>MLC JRM</u>	_____	<u>26 Sep 91</u>
SCREWS, NUTS AND BOLTS PROPERLY INSTALLED AND TIGHTENED	<u>MLC JRM</u>	_____	<u>26 Sep 91</u>

COMMENTS

_____ CONTRACTOR ENGINEERING	_____ DATE	<u>J. Eric Mlon</u> TEST STAND ENGINEERING	<u>9/26/91</u> DATE
_____ CONTRACTOR QUALITY	_____ DATE	<u>MLC JRM</u> 1LT, USAF PROCURING ACTIVITY	<u>26 Sep 91</u> DATE



# QUALIFICATION TEST PROCEDURE

CONTRACT NO. F33657-84-C-2011

3C3965G05 FUEL PUMP TEST STAND

CDRL NO. 29084

## DATA SHEET 4.2.5 CLEANLINESS INSPECTIONS

	ACCEPT	REJECT	DATE
KIT HOSES THOROUGHLY FLUSHED	<u>MAC R.M.</u>	_____	<u>26 Sep 91</u>
ALL HOSES FREE FROM BURRS AND LOOSE MATERIAL INSIDE HOSE	<u>MAC R.M.</u>	_____	<u>26 Sep 91</u>
FITTINGS AND KIT HARDWARE CLEAN AND CORROSION FREE	<u>MAC R.M.</u>	_____	<u>26 Sep 91</u>
UUT TOOLING ON LOAN AND GE EQUIPMENT MAINTAINED CLEAN AND PROPERLY PRESERVED	<u>MAC R.M.</u>	_____	<u>26 Sep 91</u>

### COMMENTS

\_\_\_\_\_  
CONTRACTOR ENGINEERING

\_\_\_\_\_  
DATE

J. Eric Mon  
TEST STAND ENGINEERING

9/25/91  
DATE

\_\_\_\_\_  
CONTRACTOR QUALITY

\_\_\_\_\_  
DATE

MAC R.M. HE, OME  
PROCURING ACTIVITY

26 Sep 91  
DATE

QUALIFICATION TEST PROCEDURE

CONTRACT NO. F33657-84-C-2011

3C3965G05 FUEL PUMP TEST STAND

CDRL NO. 29084

DATA SHEET 4.2.6  
NEW QUALITY COMPONENTS

	ACCEPT	REJECT	DATE
ALL PARTS ARE OF NEW, OF HIGH QUALITY, AND CURRENT MANUFACTURE	<u><i>[Signature]</i></u>	_____	<u>26 Sep 91</u>
ALL PARTS ARE FREE FROM SHIPPING DAMAGE	<u><i>[Signature]</i></u>	_____	<u>26 Sep 91</u>

COMMENTS

<u>CONTRACTOR ENGINEERING</u>	<u>DATE</u>	<u><i>[Signature]</i></u> TEST STAND ENGINEERING	<u>9/26/91</u> DATE
<u>CONTRACTOR QUALITY</u>	<u>DATE</u>	<u><i>[Signature]</i> 10/1, 1991</u> PROCURING ACTIVITY	<u>26 Sep 91</u> DATE

QUALIFICATION TEST PROCEDURE

CONTRACT NO. F33657-84-C-2011

3C3965G05 FUEL PUMP TEST STAND

CDRL NO. 29084

DATA SHEET 6.2.7  
ELECTROMAGNETIC INTERFERENCE TESTS

	ACCEPT	REJECT	DATE
THE UUT COMPONENT TESTING EXHIBITED NO EVIDENCE OF ELECTRO-MAGNETIC INTERFERENCE	<u>MA JEM</u>	_____	<u>26 Sep 91</u>

SUCCESSFUL COMPLETION OF THE CORRELATION TESTING SHALL DEMONSTRATE COMPLIANCE TO THIS REQUIREMENT.

COMMENTS

\_\_\_\_\_  
CONTRACTOR ENGINEERING

\_\_\_\_\_  
DATE

J. Pin Mon 9/26/91  
TEST STAND ENGINEERING DATE

\_\_\_\_\_  
CONTRACTOR QUALITY

\_\_\_\_\_  
DATE

MA JEM 26 Sep 91  
PROCURING ACTIVITY DATE

CDRL NO. 29084

## DATE \_\_\_\_\_

CDRL NO. 29084

## DATE \_\_\_\_\_

W. R. M.

26 Sep 91

### COMMENTS

DATE \_\_\_\_\_

J. Eric Mon  
TEST STAND ENGINEERING

9/26/91  
DATE

**DATE**

M. H. E. 12-4-2006  
PROCURING ACTIVITY

26 Sep 77  
DATE

CDRL NO. 29084

	ACCEPT	REJECT	DATE
DISPLAYED ALL G01 TEST MENUS	<u>MA J.E.M.</u>	<u>          </u>	<u>26 Sep 91</u>
DISPLAYED ALL G02 TEST MENUS	<u>MA J.E.M.</u>	<u>          </u>	<u>26 Sep 91</u>
DISPLAYED ALL G03 TEST MENUS	<u>MA J.E.M.</u>	<u>          </u>	<u>26 Sep 91</u>
DISPLAYED ALL G04 TEST MENUS	<u>MA J.E.M.</u>	<u>          </u>	<u>26 Sep 91</u>
DISPLAYED ALL G05 TEST MENUS	<u>MA J.E.M.</u>	<u>          </u>	<u>26 Sep 91</u>
DISPLAYED COMPLETE LIST OF PRIMARY INPUT TRANSDUCERS	<u>MA J.E.M.</u>	<u>          </u>	<u>26 Sep 91</u>
DISPLAYED EXTRA TRANSDUCER CALLOUT PER TEST MENU	<u>MA J.E.M.</u>	<u>          </u>	<u>26 Sep 91</u>
DISPLAYED MAINTENANCE FUNCTIONAL CHECKOUT DATA	<u>MA J.E.M.</u>	<u>          </u>	<u>26 Sep 91</u>
DISPLAYED CHANGE OF FUNCTIONAL CHECKOUT DATA	<u>MA J.E.M.</u>	<u>          </u>	<u>26 Sep 91</u>
AFTER APPLICABLE UUT CORRELATION TESTING, MICRO-FLO 100 DEMONSTRATED 100% DESIGN CAPABILITY	<u>MA J.E.M.</u>	<u>          </u>	<u>26 Sep 91</u>

<u>CONTRACTOR ENGINEERING</u>	<u>DATE</u>	<u>J. Eric Mann</u> <u>TEST STAND ENGINEERING</u>	<u>9/26/71</u> <u>DATE</u>
<u>CONTRACTOR QUALITY</u>	<u>DATE</u>	<u>M. H. K.</u> <u>H. J. S. R.</u> <u>PROCURING ACTIVITY</u>	<u>26 Sep 71</u> <u>DATE</u>

APPENDIX E

CORRELATION  
DATA SHEETS  
(F118)

# APPENDIX "D" PAGE 1

CORRELATION DATA ANALYSIS AND ACCEPTANCE (REV. 1 7-18-89)

F118 MAIN FUEL PUMP

P/N 12639107 S/N MX 469041

DATE OCT 1, 1991

TEST OPERATOR ERIC MOSS

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-86-C-2040  
3C3965004 FUEL PUMP TEST STAND  
CARL NO. 1016

PARAMETER	RM 1	RM 2	RM 3	AVG.	CORRELATION TOLERANCE ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT REJECT
7-2.d	HOOF PRESSURE TEST							
7-2.j	RELIEF VALVE CHECK							
7-2.j (7)	48.78	48.73	48.49	48.66	N/A	N/A	N/A	
7-2.j (8)	45.78	46.73	45.49	45.67	N/A	N/A	N/A	
7-2.k	PERFORMANCE							
	NORMAL RATED CONDITIONS (C)							
	52.25	52.15	52.25	52.22	$\pm 0.8$	51.41 - 53.01	52.11	✓
	67	65	66	66	$\pm 3.0$	63 - 69	68.6	✓
	463.6	469.0	459.4	464.0	$\pm 10$	454 - 474	461	✓
	LOW PRESSURE CONDITIONS							
	54.64	54.59	54.64	54.62	$\pm 0.8$	53.82 - 55.42	54.31	✓
	78	78	78	78.33	$\pm 3.0$	75.33 - 81.33	77.83	✓
	166.9	170.0	168.7	168.5	$\pm 10$	158.5 - 178.5	171	✓
	(207)*							

\* ( ) denotes actual torque readings displayed on instrumentation.

CONTRACTOR ENGINEERING

DATE

TEST STAND ENGINEER

DATE 10/6/91

CONTRACTOR QUALITY

DATE

TRAINING ACTIVITY

DATE 1 Oct 91



CORRELATION DATA ANALYSIS AND ACCEPTANCE (REV. 1 7-18-89)

QUALIFICATION TEST PROCEDURE  
CONTRACT NO. F33657-86-C-2040  
AC965G04 FUEL PUMP TEST STAND  
CWL NO. 1016

FL18 MAIN FUEL PUMP

P/N 12659107

S/N MX469041 DATE OCT. 1, 1991

TEST OPERATOR ERIC MOSS

PARAMETER	ERR 1	ERR 2	ERR 3	AVG.	CORRELATION TOLERANCE ABOUT AVG.	CORRELATION LIMITS	ACTUAL DATA	ACCEPT	REJECT
PERFORMANCE IDLE									
PUMP DISCHARGE FLOW (GPM)	34.73	34.68	34.73	34.71	± 0.6	34.11-35.31	34.5	✓	
INLET PRESSURE RISE (GPM)	32.5	34	32	32.8	± 1.0	31.8-33.8	32.0	✓	
TORQUE (LB-IN)	126	126	125.6	125.9	± 6	119.9-131.9	122	✓	
INTERMEDIATE CRANKING									
PUMP DISCHARGE FLOW (GPM)	8.47	8.42	8.47	8.45	± 0.2	8.25-8.65	8.39	✓	
TORQUE (LB-IN)	92.5	92.5	90.2	91.7	± 6	85.7-97.7	87	✓	
PERFORMANCE CRANKING									
PUMP DISCHARGE FLOW (GPM)	4.36	4.31	4.27	4.31	± 0.1	4.21-4.41	4.34	✓	
TORQUE (LB-IN)	92.0	93.4	92.9	92.8	± 6	86.8-98.8	87	✓	
EXTERNAL LEAKAGE							(101)*		
SHAFT SEAL LEAKAGE						N/A	N/A	0	
COUPLING SHAFT LEAKAGE						N/A	N/A	0	

\* ( ) denotes actual torque readings displayed on instrumentation.

CONTRACTOR ENGINEERING

DATE

*J. Eric Moss*  
TEST STAND ENGINEER

10/01/91  
DATE

CONTRACTOR QUALITY

DATE

10/01/91  
DATE